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DISEASES CAUSED BY BACTERIA AND FUNGI.

FRICKER, O. (1936). Können Staphylokokken zur Bildung von Actinomyces-Drusen führen ? (Studien bei Aktinomykose im Gesäuge des Schweines). **[The Role of Staphylococci in the Production of Actinomycosis]**.—*Münch. tierärztl. Wschr.* **87.** 313-318, 341-344 and 352-355. [Numerous refs.]

Actinomyces bovis, *Actinobacillus lignieresi*, *Corynebact. pyogenes* and the staphylococcus have all been credited at some time with the ability to produce club formation in the host tissue. In this article F. considers whether or not staphylococci are by themselves responsible for club formation in " actinomycosis " of swine. As a result of the histological study of a number of specimens he concludes that staphylococci, acting alone, are incapable of producing the lesions. When staphylococci are found in actinomycotic lesions they are accompanied by some other organism as, for instance, *Actinomyces bovis*. The matter in the paper cannot be covered in an abstract.—E. J. PULLINGER.

WOLLMAN, E., & BARDACH, M. (1936). Vaccination anticharbonneuse par voie intracutanée et anticorps. **[Intradermal Vaccination against Anthrax and Antibody Formation]**.—*C. R. Soc. Biol. Paris.* **122.** 741-744. [1 ref.]

Since opinions vary as to whether antibodies develop in the blood of animals vaccinated against anthrax by the intradermal method, W. and B. carried out a series of experiments to elucidate this point. Large quantities of blood were transfused from rabbits immunized by the intradermal route to non-immunized rabbits. A passive immunity resulted. The presence (to a limited though effective extent) of antibodies in such serum is thereby proved. W. and B. suggest that the immunity derived through immunization by the intradermal method requires no special form of explanation.—C. DAVENPORT.

I. IWANOFF, K. (1936). Milzbrand bei Büffeln in Bulgarien. **[Anthrax in Buffaloes in Bulgaria]**.—*Arch. wiss. prakt. Tierheilk.* **70.** 377-381. 3 tables. [7 refs.]

II. IWANOFF, K. (1936). Verbreitung und Diagnose des Milzbrandes bei Haustieren in Bulgarien. [**Anthrax in Domestic Animals in Bulgaria**].—*Ibid.* 371-376. 3 tables. [6 refs.]

III. SCHERN, K. (1936). Milzbrandversuche. [**Anthrax**].—*Berl. tierärztl. Wschr.* **52.** 569-570.

I. As compared with cattle, sheep and horses, buffaloes are rarely infected with anthrax, and apparently have a considerable natural resistance. This fact is of importance in Bulgaria where there is about one buffalo to every three cows. It is claimed that the buffalo is superior to the trek-ox for draught purposes and that its flesh is nutritious and palatable. A good buffalo cow gives one to two litres of milk, rich in fat and mineral salts. Buffaloes are used extensively for dairy and draught purposes, *e.g.* it is estimated that there are nearly twenty-eight and a half million head of buffalo in British India.

II. The seasonal incidence of anthrax in cattle, horses, sheep, goats, buffaloes, swine and donkeys is recorded. In all species the incidence was higher during the summer but the difference was only striking in the case of horses and sheep. A high annual incidence was recorded amongst cattle, horses and sheep. Anthrax was, however, of but little significance amongst the other animal species. Microscopic and cultural tests are useful for diagnosis but Ascoli's precipitin test is even more valuable, particularly during hot weather when carcasses decay rapidly.

III. In culture media virulent anthrax bacilli can break down proteins such as casein or gelatin very rapidly, whereas the avirulent Pasteur strain acts less rapidly. It is claimed that virulence and proteolytic activity run parallel and that, in consequence, strains of *Bacillus anthracis* can be typed as regards virulence according to their biochemical reactions. Anthrax bacilli, after being mixed with specific antiserum, become less proteolytic than similar untreated cultures. This is considered as evidence that specific antiserum contains a substance capable of neutralizing the proteolytic ferment, and also that proteolytic activity and virulence run parallel. [The possibility should not be ignored that the antibody (connected with the euglobulin) may unite with the surface antigen of the bacillus, enveloping it and thus cloaking enzyme action]. The inoculation (subcut.) of rabbits with trypsin produces death with a syndrome similar to that of acute anthrax. This is taken as evidence that *B. anthracis* probably produces its lethal effect by virtue of its proteolytic enzymes.—E. J. PULLINGER.

I. JEŽIĆ, J., & KODRNJA, E. (1935). Prvi rezultati jednokratne vakcinacije protiv antraksa u praksi. [**First Results with a Single-Vaccination Method against Anthrax**].—*Jugoslov. vet. Glasn.* **15.** 57-66. 3 tables.

II. JEŽIĆ, J., & KODRNJA, E. (1936). Jednokratna vakcinacija protiv bedrenice do kraja 1935. godine. [**Single-Dose Vaccination against Anthrax in Yugoslavia**].—*Ibid.* **16.** 167-203. 2 tables.

I. Excellent results with cattle and sheep, both in the laboratory and in the field, were obtained with a single-dose anthrax vaccine, prepared by J. and K. at the Veterinary Experiment Station, Zagreb (Yugoslavia). Strong immunity is obtained by the 14th day and lasts for nine months at least. The vaccine is harmless both to the animals treated and to persons handling it. Of 16,000 animals vaccinated, none died as the result of the inoculation. Of 500 vaccinated animals exposed to field infection, none died during the first nine months, while 20 cases occurred among 500 non-vaccinated animals.

The only disadvantage is that at present this vaccine cannot be used for

horses and goats. It should, however, become one of the most frequently employed vaccines in Yugoslavia for cattle and sheep.

[J. and K. give no detailed description of the preparation of their vaccine. All they do is to let the reader know that it is not a glucoside (saponin) vaccine].

II. The results of vaccinations for the year 1935 are given.

The vaccine is administered either intracutaneously or subcutaneously, and the reactions are generally local. In odd cases an injection of serum is required because of severe general reactions. The immunity obtained is of about eight months' duration, hence three inoculations within two years are suggested.

—B. OSWALD (SKOPLJE).

SCHAEFER, W. (1936). Sur la morphologie de la bacteridie charbonneuse. [**Morphology of** *B. anthracis*].—*C. R. Soc. Biol. Paris.* **122.** 897-899. [3 refs.]

This is a study of the factors influencing the morphology of *B. anthracis* when grown on various media, particularly the development of R or S colonies, and the presence or absence of capsulated forms. The media used in the experiments included ordinary or alkaline gelatin, and horse or beef serum. The author finds that a direct relationship exists between the media employed and the morphology assumed by the organism, and he attributes this fact to its inability to develop normally in unfavourable circumstances.—C. DAVENPORT.

KJELDBJERG, J. (1936). Husdyrtuberkulosens bekaempelse i Thisted amt. [**Control of Animal Tuberculosis in Thisted (Denmark)**].—*Maanedsskr. Dyrlaeg.* **47.** 497-508 and 529-538. 2 tables, 1 map, 1 chart.

K. works in a district where there has been intensive trade in cattle and where, consequently, tuberculosis has spread. Until recently, practically no steps had been taken to control tuberculosis. In 1934, all dairies, abattoirs, farmers' and small holders' organizations and the chief corporation of cattle-breeders for the whole county combined in an organization called " The Society for the Control of Tuberculosis in Domestic Animals in the 'District' of Thisted ". To this society the abattoirs must pay 2 øre [one farthing] per pig slaughtered and the dairies 2 øre per 1,000 kg. of milk received. A veterinarian has been attached to the organization as administrator of the campaign. The number of cattle in the " district " is about 120,000, in 8,986 herds. By June, 1935, about 76 % of the herds and 86 % of the animals were tested. 41 % of the animals reacted. 2,204 herds (32 %) containing 24 % of the animals tested, had no reactors. 1,247 herds, containing 20 % of animals tested, had only a few reactors. By means of the general financial support which has recently been given by the state, most of these herds will soon be clean. A " district " map shows that the percentage of tuberculosis-free herds is highest in certain rather thinly populated areas, and lowest in the more densely populated areas surrounding the towns. The campaign is being continued on the basis mentioned above, accompanied by education of the farmers and propaganda.—H. C. BENDIXEN (COPENHAGEN).

EGEHØJ, J., & PLUM, N. (1936). Tuberkuløse leverinfektioner uden samtidige makroskopisk paaviselige tuberkuløse forandringer i leverens lymfeknuder. [**Tuberculosis of the Liver Without Visible Changes in the Hepatic Lymph Nodes**].—*Maanedsskr. Dyrlaeg.* **48.** 91-100.

Histological and bacteriological examinations were carried out on the livers of 14 pigs, which showed lesions of miliary tuberculosis and swollen but not visibly tuberculous lymph nodes. Tubercle bacilli of the avian type were cultivated

from 13 livers and all showed histologically progressive tuberculous changes in the liver tissue as well as in the lymph nodes. Livers with alterations of this nature are generally associated with tuberculosis in the lymph nodes of the alimentary tract. 3·6% of 996 pigs examined showed this peculiarity.—H. C. B. (COPENHAGEN).

BANG, O., & JEPSEN, A. (1936). Tuberkelbaciller af typus humanus som aarsag til tuberkulose hos kvaeg. [**Tuberculosis in Cattle due to the Human Type of Bacillus**].—*Medlemsbl. danske Dyrlaegeforen.* **19.** 229-237. 1 fig.

In a previously tuberculosis-free herd, 6 out of 18 animals showed slight tuberculin reactions in 1934. In a second test with both bovine and avian tuberculin there were no reactions to the latter. Four of the reactors were sold, and the others were isolated in a separate cowshed. In March, 1935, all the animals in the herd reacted and some of the reactions were fairly strong. Simultaneously, tubercle bacilli of the human type were cultivated from the sputum of the manager of the farm, who had been in a sanatorium since January, 1935. Two strongly reacting calves were slaughtered. One of them showed no sign of tuberculosis ; in the other there was a lesion in the left bronchial lymph node, from which tubercle bacilli of the human type were isolated. The type was determined by means of Löwenstein's culture media, and by inoculation experiments on g. pigs, rabbits, hens and heifers.—H. C. BENDIXEN (COPENHAGEN).

PLUM, N. (1936). Omkring tuberkuloseproblemet. [**The Tuberculosis Problem. (The Types of Tubercle Bacilli – Avian Infection in Cattle)**].—*Skand. VetTidskr.* **26.** 1-14. 4 tables. [1 ref.] [English summary].

The article is the author's doctorate thesis on the tuberculosis problem, and is in part an abstract and review of some of his earlier papers on the same subject. [*V. B.* **4.** 370 and **6.** 204]. The characteristics of the tubercle bacillus are discussed, including the question as to whether a cell-nucleus is present in the body of the organism or not, and the problem of inheritance in the bacilli.

—GUSTAV NAERLAND (OSLO).

I. VALTIS, J., & VAN DEINSE, F. (1936). Effets du vieillissement sur les cultures de bacilles tuberculeux de type bovin. [**Effect of Age on Cultures of the Bovine Type of** *Mycobact. tuberculosis*].—*C. R. Soc. Biol. Paris.* **122.** 895-897. [2 refs.]

II. MASSEY, A. B., & SNIDER, G. E. (1936). **Inhibitory Action of Colloidal Sulphur in Corper's Agar on the Growth of Four Strains of Mycobacterium Tuberculosis Hominis.**—*Amer. J. publ. Hlth.* **26.** 811-812. [1 ref.]

III. MACNABB, A. L., & BROWN, M. H. (1936). **Tentative Methods for the Cultivation and Isolation of Tubercle Bacilli and the Production of Tuberculin.**—*Amer. publ. Hlth Ass. Yearb. 1935-1936.* pp. 188-192. Suppl. to *Amer. J. publ. Hlth.* **26.**

IV. WONG, S., & WEINZIRL, J. (1936). **An Inexpensive Synthetic Medium for Growing Mycobacterium tuberculosis.**—*Amer. Rev. Tuberc.* **33.** 577-583. 1 fig., 1 table. [8 refs.]

V. IMURA, K. (1935). **On the Influence of the Ethereal Oils upon the Culture of Tubercle Bacilli and upon the Development of Experimental Tuberculosis in Animals. (Second Report).**—*J. Shanghai Sci. Inst.* Sect. IV. **1.** 235-270. 25 tables, 12 charts. [4 refs.] [In English].

I. Two dysgonic cultures of the bovine type were used. From investigations

of these cultures on various media, and virulence tests after varying periods of incubation, the authors concluded that the dysgonic S colony of the bovine strain represented a resistant form which retained its virulence under unfavourable conditions.

II. This short investigation was designed to seek an explanation of the low incidence of tuberculosis among sulphur workers. Colloidal sulphur was incorporated in Corper's potato-glycerin agar medium, and the ability of three human strains to grow on this medium was determined. Strains virulent to g. pigs would not grow on media containing more than 1·5 mg. of sulphur per 100 ml., whereas comparatively avirulent strains tolerated up to 200 mg. of sulphur. Further experiments are necessary before a definite statement can be made.

III. This is the report of the Referees on Tuberculosis, presented to the Standard Methods Committee on Diagnostic Procedures and Reagents. They state that the cultural method for the isolation of *M. tuberculosis* has been found in most instances to be quite as reliable as g. pig inoculation. The following media give satisfactory results :– Löwenstein's, Petragnani's, Woolley's, and a modified Petroff's medium. Löwenstein's is considered to be the best. It is recommended that, for the elimination of contaminating organisms, specimens should be treated with 3% concentrated HCl for two hours and then neutralized with 3% NaOH.

Full details of the procedure are given, together with the preparation of reagents and culture media. The preparation of tuberculin, including tests for non-specific toxicity, sterility and standardization, is also dealt with.

IV. W. and W. set out to prepare a medium for the cultivation of tubercle bacilli which gave a better growth rate than Long and Seibert's asparagine medium, and was less expensive to prepare. The high cost of most synthetic media is due to the inclusion of asparagine. Eventually they found that, by replacing asparagine with ammonium malate and by adding 1% glucose to Long and Seibert's medium, after the medium had been autoclaved, a medium could be prepared at a third of the cost of that containing asparagine. Maximum growth was obtainable in four weeks, *i.e.*, in about half the time usually required. Details of the composition of the modified medium are given.

V. Six ethereal oils were tested for their bacteriostatic power on tubercle bacilli *in vitro*. The results showed that they could be placed in the following order of diminishing power :– eugenol, turpineol, expressed oil of nutmeg, geraniol, anethole and oil of lemon. When the effect of injecting these oils into experimentally infected animals was determined, it was found that the *in vivo* and *in vitro* results were not parallel. Anethole and oil of lemon gave the best results and led to very mild lesions, but the inhibitory action of eugenol and turpineol was not so marked.—GWILYM O. DAVIES.

I. ANON. (1935). Die Säuglingstuberkulose in Lübeck. Zusammenfassung der anlässlich der Lübecker Säuglingserkrankungen auf Veranlassung und mit Unterstützung des Reichministeriums des Innern durchgeführten Untersuchungen. [**The Lübeck Tuberculosis Disaster (Infants). Official Enquiry**].—*Arb. ReichsgesundhAmt.* **69.** pp. 406. Numerous figs. and tables. [Numerous refs.]

II. TORIKATA, R., & OKUMURA, Y. (1936). Immunologische Versuche mit BCG. I. Mitteilung. Wird das Impedin auch von BCG produziert ? II. Mitteilung. Der Unterschied zwischen der nativen und der abgekochten Aufschwemmung von BCG in seiner Phagozytierbarkeit. III. Mitteilung. Ueber die optimale Abkochungszeit der Aufschwemmung von BCG für

seine maximale Phagozytierbarkeit. IV. Mitteillung. Vergleich von BCG mit dem BCG-Koktigen in der maximalen präventiven Wirkung gegen die experimentelle Tuberkelbazilleninfektion der Vorderkammern normaler Kaninchen, und zwar sowohl bei punktierten als auch bei nichtpunktierten Augen.—[**Immunity Experiments with BCG. I, II, III and IV**].—*Zlb. Bakt. I. (Orig.).* **137.** 56-57, 57-59, 59-60 and 61-64. 1 text fig., 2 figs. on 1 plate, 4 tables, 2 graphs.

I. This is the full report of the official investigation which followed the Lübeck disaster in which over 70 babies died of generalized human tuberculosis within a few months of birth. These children belonged to a group of 251, all of whom had been fed during the first ten days of life with living culture of what was thought to be BCG. The object of the treatment was prophylactic vaccination against tuberculosis. As opposed to the foregoing incidence, the tuberculosis mortality amongst 164 unvaccinated children was 9·8% during the same period. The epidemiology, clinical and pathological findings, bacteriological examinations, tuberculin reactions, and Röntgen ray and other incidental investigations are reported at great length. A report of this size is obviously outside the scope of an abstract and readers are referred to the original article, which constitutes a very valuable addition to the literature on infantile tuberculosis.

The report of the bacteriological investigation is of more general interest to veterinarians. The main object in this connexion was to ascertain if the BCG cultures developed virulence whilst at the Lübeck laboratory or whether they became contaminated with virulent tubercle bacilli. It was concluded that the disaster could not be attributed to an overdose of vaccine, nor was it due to excessive toxicity of the tuberculin used for testing in conjunction with the vaccination. The investigation failed to reveal any increase of virulence in BCG cultures when they were subjected to a variety of cultural or biological procedures which might have enhanced virulence. Of the subcultures which had been prepared at Lübeck from the original Paris culture, some proved to be pure avirulent BCG, some contained a mixture of BCG and virulent human tubercle bacilli, whilst some subcultures, which had been actually used for vaccine preparation, were pure strains of virulent human tubercle bacilli. All the virulent strains which were isolated from so-called BCG cultures showed a characteristic clumping growth in broth (as opposed to uniform pellicle formation) and produced a green coloration in Sauton's broth. These cultural features were also characteristic of the " Kiel " strain of human tubercle bacilli, the only virulent strain stored at the Lübeck laboratory.

II. The object of this series of investigations was to ascertain the best method of making practical use of BCG inoculation. In a preliminary experiment, the influence of filtrate of a culture of BCG upon the phagocytosis of *Staphylococcus aureus* by leucocytes was compared with the similar influence displayed by extracts of BCG heated at 100°C. for 30 minutes. Unheated antigen caused slight inhibition of phagocytosis and heated antigen caused stimulation. It was then shown that a suspension of BCG, heated at 100°C. for 30 minutes, was more readily phagocytosed than an unheated suspension. These facts were interpreted as evidence that heated antigen has a much greater immunizing value than unheated BCG vaccine. The optimum duration of heating was 30 minutes.

The practical value of these studies was demonstrated by local immunization of the eye of rabbits. Some were inoculated intravenously with unheated and others with heated BCG. Subsequently all were inoculated intra-ocularly with virulent tubercle bacilli. Resistance to this infection was judged by counting and classifying, according to size, such visible lesions as appeared on the iris.

Judged upon this basis, rabbits receiving heated antigen showed a higher resistance than those receiving unheated vaccine.—E. J. PULLINGER.

NEW ZEALAND. (1936). **The Stock (Johne's Disease) Regulations, 1936.**—*Dep. Agric. Regulations Act, 1936.* Ser. No. 19/1936. pp. 2. Wellington: Govt. Printer. [8vo] [2d.]

Regulations were gazetted on September 10th, governing the examination and removal of cattle affected with Johne's disease. It is now necessary to have cattle tested with johnin or other test material before they are moved from the North Island to the South Island and, where Johne's disease is known to exist, the Inspector may require muster of the cattle and the application of the johnin test.

[Although not stated in these regulations, cattle leaving England will require to be johnin-tested].—C. S. M. HOPKIRK.

DEEM, A. W. (1936). **Notes on the Preparation and Use of an Antigen for the Agglutination Test in Swine Erysipelas.**—*J. Amer. vet. med. Ass.* **89.** 197-198. [1 ref.]

D. claims that beef infusion broth, containing yeast and tryptophane, provides an excellent medium for the growth of *Erysipelothrix rhusiopathiae* for the preparation of antigen in the agglutination test. He describes an antigen prepared from bacilli in the smooth phase. The resultant suspension does not flocculate and the results of the test can be read after 24 hours.—M. BURKE.

I. SAENZ, A., COSTIL, L., & SADETTIN, M. (1936). Nouveau type de bacille acido-résistant parasite du cobaye neuf. [**A New Acid-Fast Bacillus Found in Guinea Pigs**].—*Ann. Inst. Pasteur.* **57.** 254-298. 12 figs., 9 tables. [Numerous refs.]

II. STEENKEN, W., Jr., & LANDAU, A. (1936). **Dissociation of Two Unusual Acid-Fast Organisms Isolated from Human Sources.**—*J. infect. Dis.* **58.** 247-258. 3 figs. [7 refs.]

III & IV. PINNER, M. (1935). **Atypical Acid-Fast Microörganisms. III. Chromogenic Acid-Fast Bacilli from Human Beings. IV. Smooth-Growing Tubercle Bacilli.**—*Amer. Rev. Tuberc.* **32.** 424-439 and 440-445. 6 text figs., 7 figs. on 1 plate. [Numerous refs.]

I. Apparently healthy g. pigs which have never been injected with tuberculous material sometimes harbour acid-fast bacteria in their internal organs, particularly in the spleen. The authors have isolated 21 such strains, seven of which have proved to be avian in type. The remaining 14 appear to represent an entirely new species and can be clearly differentiated from the recognized types by certain cultural and biological characters. It is this new species which is studied in detail in this paper. An account is given of the morphology, cultural characters, pathogenicity, serological reactions, etc., of the organism.

This new strain appears to cause no marked illness in the g. pigs, infection being of a very mild nature. Infection appears to be of alimentary origin and the organism can usually be recovered from the spleen. The authors isolated the organism from apparently normal g. pigs and from g. pigs which had been subjected to injections of acetone extracts.

II. S. and L. consider that the significance of the various so-called acid-fast organisms, other than tubercle bacilli, isolated from human sources is still speculative. Although some have certain resemblances to saprophytes, it seems very probable that they may be responsible, in certain circumstances, for disease

in man. They came to this conclusion after studying two strains of acid-fast bacilli isolated from two human cases of chronic pulmonary illness. For this purpose each of the strains was dissociated into at least two variants. With the exception of one which was feebly pathogenic for mice and rabbits, the others were non-pathogenic.

III & IV. The first paper is an account of 15 strains of acid-fast bacilli isolated in culture from different human sources. In many instances tubercle bacilli were also present. Morphologically, these organisms closely resembled tubercle bacilli. Growth was slow, the organisms having grown best on egg and potato media. The time required for maximum growth was from two to four weeks. They were of low virulence for laboratory animals, benign and self-healing lesions being produced. With the exception of two strains, neither direct nor indirect transfer methods from animal lesions enhanced the virulence of the organisms. Their significance in human tissues is uncertain.

In the second paper P. describes four strains of organisms from four cases of human tuberculosis. Morphologically and culturally they were different from tubercle bacilli and in pathogenicity they resembled very closely the acid-fast bacteria described in the first paper. As the organisms were grown from proved tuberculous sources and as P. successfully transformed three of the strains into typical tubercle bacilli, he concludes that in the first place the organisms were " smooth " variants.—GWILYM O. DAVIES.

BARBONI, E. (1936). A propos des infections par bacille du rouget chez l'homme. (Auto-observation). [*Erysipelothrix rhusiopathiae* **Infection in Man**].—*Boll. Sez. ital. Soc. int. Microbiol.* **8.** 27-32. [Num. refs.] [In French].

An account of swine erysipelas, localized on the dorsal surface of the left hand.
—M. BURKE.

I. VELU, H., & ZOTTNER, G. (1936). Intradermoréaction et séro-agglutination dans le contrôle de la prémunition et de la vaccination contre les brucelloses. **[Allergic and Agglutination Reactions in Animals Premunized or Vaccinated against Brucellosis].**—*C. R. Soc. Biol. Paris.* **122.** 597-598.

II. BUTLER, W. J., WARREN, D. M., & MARSH, H. (1936). **Experimental Vaccination of Range Calves with a Living Culture of Brucella abortus. I. Results of Agglutination Tests Made at Intervals during Three Years following Vaccination.**—*J. Amer. vet. med. Ass.* **89.** 163-168. 1 fig., 1 table.

I. A comparison was made of the agglutination and intradermal reactions produced by one or more injections of living or dead brucella in a fatty base. [The species of animal is presumably sheep but it is not stated : nor is the variety of *Brucella* given]. The agglutinin response was tested both with fresh suspensions and with those which had been heated and formolized. The intradermal response was tested with Dubois' " allergène ". It was found that fresh suspensions gave a greater number of positive agglutination results than did heated formolized suspensions, and that the results agreed more frequently with those of the intradermal test. Positive intradermal reactions were, however, also obtained in some uninoculated controls, and it is concluded that in vaccinated animals positive intradermal results unaccompanied by positive agglutination results should be regarded with reserve.

II. In 1932, arrangements were made to test the efficiency of calfhood vaccination against contagious abortion in a large herd of range cattle with a living culture of *Br. abortus* of low virulence, supplied by the U.S. Bureau of Animal Industry. The vaccine was injected (subcut.) in a dose of 10 c.c. 295 animals

were vaccinated and 120 left as controls. The present report deals with the post-vaccinal agglutination reactions of the vaccinated animals, *viz*, five tests of 190 animals over a period of three years and two tests of the remainder, which unfortunately had to be disposed of on account of drought after one year.

The agglutinins produced by vaccination were reduced in 8 to 12 months to such an extent that reactions at 1 : 200 were no longer present, whilst after 2 years none reacted above 1 : 50. At this time 97% of the animals vaccinated when 4 to 6 months old, and 77% of animals vaccinated when 6 to 12 months old, were negative at 1 : 25. All passed through one pregnancy and the results indicated that *Br. abortus* did not become established in any of the cows as a result of vaccination or otherwise.—A. W. STABLEFORTH.

STOLNIKOV, V. I. (1936). Bakteriologičeskaja diagnostika brucelleza kr. rog. skota i svinej. [**Cultural Diagnosis of Bovine and Porcine Brucella Infection**]. —*Sovyet. Vet.* No. 6. pp. 53-55.

The record of the results of the bacteriological examination, at the Leningrad Veterinary Institute, of the aborted foetuses of cows and sows, during the last three and a half years, shows that in almost half of the cases a negative result for brucellosis was obtained. In 1933, only 48% of 230 foetuses from aborted cows, and 2 out of 30 porcine foetuses yielded brucella cultures. In many cases where negative results had been obtained from bacteriological examination of the foetuses, blood tests of the cows and sows gave positive reactions. The author considers that examination of the foetuses is not dependable for the diagnosis of the infection. A combination of clinical observation and serological examination of the dams is more reliable. The placenta should always be examined together with an aborted foetus.

TUNNICLIFF, E. A., & MARSH, H. (1935). **Bang's Disease in Bison and Elk in the Yellowstone National Park and on the National Bison Range.**—*J. Amer. vet. med. Ass.* **86.** 745-752. 2 figs., 1 table. [3 refs.]

This work was carried out over a period of three years (1931 to 1933) to determine the extent of *Brucella abortus* infection in two herds of bison and two of elk. The tests were mainly serological, evidence of infection being accepted as positive in cases where sera gave complete agglutination of *Br. abortus* suspensions at titres of not less than 1 : 50. In the case of some of the slaughtered bulls, bacteriological examinations were made from the testes. In the Yellowstone Park herd a high percentage of reactors of both sexes was found, and this was especially true of the steers and bulls. Over the three years, 72% of 76 bulls, 44% of 63 steers and 66% of 301 cows were found to be reactors to the test. The records of the slaughtered bison from the National Bison Range for two years showed 66% of 99 bulls and 54% of 74 cows to be reactors. In view of the high percentage in the bulls, it is suggested that bison may be more susceptible to brucella infection than are domesticated cattle.

Br. abortus was isolated from diseased testicles of three bulls. The strains isolated had all the characteristics attributed to those of bovine origin.

In agglutination tests on 105 elk sera 8 per cent. were positive, and 14% were doubtful reactors. These animals had access to the buffalo range. From a second herd, which existed as a separate unit, 45 blood samples were obtained and, of these, two gave suspicious reactions at a dilution of 1 : 25.—D. R. WILSON.

PLATT, A. E. (1936). **Brucella Infections : The Frequency of Agglutinins for Brucella abortus in the Population at Large.**—*Med. J. Aust.* Feb. 22nd. 268-269. 1 table. [3 refs.]

396 human sera, sent in for Wassermann tests, were examined for agglutinins for *Br. abortus*. 5% gave agglutination at 1 : 10 or higher; of these, only 4 sera agglutinated at 1 : 80 or higher. Of 19 sera from cases of pyrexia of unknown origin, 2 agglutinated *Br. abortus* at 1 : 5,120 and 1 : 10,240 respectively. P. considers that no definite titre can be laid down for the diagnosis of brucella infection in man, but that a rising titre, as indicated by two examinations, serves as the most useful aid to diagnosis.—W. I. B. BEVERIDGE.

I. KABLER, P., & MACLANAHAN, Margaret. (1936). **A Differential Study of Forty Brucella Strains Isolated in Minnesota.**—*J. infect. Dis.* **58.** 293-298. 2 tables. [5 refs.]

II. HENRICSSON, E., & LINDSTRÖM, B. (1936). Zur Frage der biologischen Konstanz von Brucella abortus bovis. [**The Biological Constancy of** *Br. abortus*].—*Zlb. Bakt. I.* (*Orig.*). **136.** 445-451. 5 tables. [14 refs.]

III. VEAZIE, L., & MEYER, K. F. (1936). **The Serological Classification of the Brucella Group.**—*J. infect. Dis.* **58.** 280-287. 3 tables. [12 refs.]

I. Forty strains of brucella, 38 of which were isolated from cases of undulant fever in human beings in Minnesota, were classified as follows:– *Br. abortus* (porcine strain), 25 cases; *Br. abortus* (bovine strain), 13 cases. The strains from two cases gave conflicting reactions, one appearing, however, to be *Br. abortus* (porcine strain) and one *Br. melitensis*. Since agglutinin-absorption does not distinguish between the bovine and porcine strains of *Br. abortus*, it is of little or no value for Minnesota strains. The original carbon-dioxide requirements and dye plate characteristics were closely correlated, and provided a fairly reliable means of differentiation. The hydrogen-sulphide test was less reliable. The distribution of the strains according to occupational groups is discussed, as well as certain difficulties connected with the dye and other methods.

II. A bovine strain of *Br. abortus* isolated from man was passed through seven goats, and tested after each passage by the methods ordinarily used for brucella. No change was found in its pathogenicity for apes, in its resistance to the action of thionin, gentian-violet or fuchsin, in its ability to produce hydrogen-sulphide or in its serological characters.

III. Over 400 strains of brucella from 20 countries were classified by appropriate absorption by means of sera, which were made monospecific for the "*abortus-suis*" or "*melitensis*" types respectively. Only 5% of the strains were too rough for such classification, the remainder being easily typed. A small sub-type, consisting of 26 strains, which is similar to the *abortus* type but has a greater proportion of *melitensis* antigen, is described. It is regarded as similar to certain intermediates described by WILSON and by OLIN.

The serological classification disagreed with the earlier classification of MEYER and ZOBELL on H_2S production, dye tests, etc., in 5·8% of cases. These are discussed. The serological classification of brucella strains is regarded as indispensible for the proper identification of all strains for epidemiological purposes, and its occasional failure to agree with other methods is looked upon as emphasizing the fallacy of relying upon any one test for identification.—A. W. STABLEFORTH.

MONTGOMERIE, R. F., & ROWLANDS, W. T. (1936). *Cl. welchii*, **Type C, Wilsdon** (*B. paludis*, **McEwen) Isolated from Sheep in North Wales.**—*Vet. Rec.* **48.** 829-832. 2 tables. [4 refs.]

A brief note of a disease in North Wales causing sudden death in sheep. The history suggested that the condition was similar to that known on the Romney Marsh as "struck" [*V. B.* **3.** 409]. The isolation of *Clostridium welchii* Type C

and the demonstration of the corresponding toxin in the intestinal contents and certain body fluids of affected sheep confirmed this diagnosis. The cases studied had undergone autolysis, so that definite conclusions regarding pathogenesis could not be drawn; nevertheless M. and R. question whether the disease is a true enterotoxaemia.—E. J. PULLINGER.

OXER, D. T. (1936). **The Transmission of Antitoxic Immunity from the Ewe, Vaccinated against Entero-Toxaemia, to the Lamb.**—*Aust. vet. J.* **12.** 54-58. 3 tables. [6 refs.]

It is usually impracticable, under Australian conditions, to vaccinate lambs against enterotoxaemia when under three weeks of age. O. therefore conducted an experiment to determine whether passive immunity could be given to lambs by vaccinating ewes prior to parturition.

Sixteen ewes were given the usual two doses of vaccine just before lambing commenced. In most cases this produced a good response, as was shown by the antitoxin content of their sera, which was titrated at varying intervals by toxin-antitoxin tests in mice.

Sera taken from lambs before they had sucked showed no antitoxin, but serum taken three days after birth showed in most instances a fairly high antitoxin content. The antitoxin content of the lambs' sera gradually declined, but even a month after birth an appreciable quantity was still present. It is concluded that immunity is transmitted from the ewe to the lamb *via* the colostrum. Full details are given of the methods employed and of the results, the latter being set out in tables.—W. I. B. BEVERIDGE.

ZARICKIJ, L. A. (1934). Opúzdrené bakterie horných ciest dýchacich u prasiat. **[Capsulated Bacteria from the Upper Respiratory Tract of Swine].**—*Bratislavske lekárs. List.* **14.** 344-347. [11 refs.] [Abst. from abst. in *Bull. Inst. Pasteur.* **33.** 497].

GRENIER considers that the causal agent of infectious rhinitis of swine is probably the cause of rhinoscleroma of human beings, but RUDAJEV does not agree. As capsulated bacteria are often found in the upper respiratory tract of swine, the question can only be solved by limiting observations to swine from agricultural establishments or from other places where the inhabitants are affected with rhinoscleroma.

Bacteriological examination of 27 pigs, 24 healthy and three with pneumonia, revealed capsulated bacteria in 16, *Bact. friedländeri* in one and "*B. mucosus vulgaris*" in one. Not being able to identify the "Frisch bacillus" with certainty, the author used Elbert's bile test, 18 strains of encapsulated bacteria and, for comparison, a strain of *Bact. rhinoscleromatis*, being inoculated into ox bile. After 15 days, passage was successfully established 16 times. Apart from the "Frisch bacillus", ox bile was only active in two cases, including the "*B. mucosus vulgaris*" strain.

DISEASES CAUSED BY VIRUSES.

I. CAMPBELL, A. D., & TURNER, A. W. (1936). **Studies in Contagious Pleuro-Pneumonia of Cattle. II. A Complement-Fixation Reaction for the Diagnosis of Contagious Bovine Pleuro-Pneumonia. Its Use in Experimental Investigations and in the Control of the Disease.**—*Bull. Coun. sci. industr. Res. Aust.* No. 97. pp. 11-52. 11 tables, 1 appendix. [Numerous refs.] [See also *V. B.* **6.** 29].

II. SEDDON, H. R. (1936). **Studies in Contagious Pleuro-Pneumonia of Cattle. II (a). Observations on the Diagnosis of Bovine Contagious Pleuro-Pneumonia by Means of the Complement-Fixation Test of Campbell and Turner.**—*Ibid.* 53-62. 3 tables, 1 appendix. [5 refs.]

III. ALBISTON, H. E. (1936). **Studies in Contagious Pleuro-Pneumonia of Cattle. II (b). The Complement-Fixation Test for Pleuro-Pneumonia.**—*Ibid.* 63-64.

IV. CAMPBELL, A. D. (1936). **Studies in Contagious Pleuro-Pneumonia in Cattle. III. A Cultural Study of the Distribution of the Specific Organism,** *Borrelomyces peripneumoniae,* **throughout the Body of Animals Naturally and Artificially Infected.**—*Ibid.* 65-88. 23 figs., 3 tables. [13 refs.]

I. C. and T. describe in detail the technique of a complement-fixation test for the diagnosis of cont. bov. pl.-pneumonia. They used the antigen introduced by EBERT and PERETZ, which is prepared by extracting in distilled water, at boiling point, fresh pleuritic exudate from naturally occurring cases of the disease. There is a complete absence of " fleeting reactions ". The test was found to be extremely specific ; out of 2,059 sera from cattle known to be free from " pleuro-pneumonia ", but in many cases suffering from other diseases, only three gave a faint trace of fixation. Cattle which received the usual prophylactic vaccination in the tail gave positive reactions to the test from 2 to 11 days later. The longest period during which an animal continued to react after uncomplicated vaccination was 37 days. Inoculation of virulent material by various routes always brought about a positive reaction in cattle and also in sheep and goats.

In studying the complement-fixation response to natural infection, tests were carried out at weekly intervals over a period of two years in a naturally infected experimental herd, containing susceptible and insusceptible cattle. Positive reactions often appeared before the onset of clinical symptoms. Some cases were detected in which the causal organism was later found to be confined to the mediastinal lymph nodes, which were enlarged and oedematous. Out of 45 cattle which had apparently recovered, but in which the organism persisted in encapsulated lung lesions, 42 continued to give positive reactions. On the other hand, recovered animals, which on *post-mortem* examination showed small sterile sequestrae or only old fibrous pleural adhesions, usually did not give positive reactions. All of 25 cases of acute " pleuro-pneumonia " gave positive reactions. In some cattle, shown by the test to be infected, the disease took such a mild course that no clinical symptoms were observed even though body temperatures were taken daily.

Methods of using the complement-fixation test for controlling " pleuro-pneumonia " in Australia are discussed. It is expected that the test will greatly help in controlling outbreaks and will permit the safe transfer of cattle from infected to uninfected areas.

II. At Glenfield Veterinary Research Station, this complement-fixation test was found to possess a high degree of reliability. All known infected animals reacted and 103 free of the disease did not. A number of non-clinical cases were detected. An outbreak in a large herd was successfully controlled by the use of the test.

III. The complement-fixation test as described by Campbell and Turner was applied to some 800 cattle from a property where " pleuro-pneumonia " had occurred. All positive reactions were confirmed *post mortem*, and the survivors all remained free from the disease for over two years, which is taken as evidence that all infected animals were detected.

IV. In acute cases of cont. pl.-pneumonia the causal organism could usually be isolated culturally from the blood early in the infection, but later in the disease this was not always possible. Blood culture tests are, therefore, of little value in practical diagnosis. In chronic cases with encapsulated lung lesions the organism could usually only be recovered from the lung lesions, but occasionally also from the mediastinal and bronchial lymph nodes. In acute cases the causal organism was found constantly in pleuritic exudate, in the lung lesions and in the mediastinal and bronchial lymph nodes. It was also found in many other parts of the body not showing obvious lesions. In completely recovered animals, where the only remaining lesions were local fibrosis and adhesions, the organism could never be demonstrated. Cultures of the organism were obtained from organs of some foetuses from cows which had been artificially infected by subcutaneous inoculation.

Sheep, goats and rabbits were infected by inoculation (subcut.) of pleuritic exudate and the organism was recovered from various organs.—W. I. B. Beveridge.

I. Balozet, L. (1936). Rickettsies et Rickettsioses. [**Rickettsia and Rickettsia Infections**].—*Rev. gén. Méd. vét.* **45.** 385-408. 3 figs., 1 table.

II. Pinkerton, H. (1936). **Criteria for the Accurate Classification of the Rickettsial Diseases (Rickettsioses) and of their Etiological Agents.**—*Parasitology.* **28.** 172-189. 10 figs. on 2 plates, 5 tables. [Numerous refs.]

I. A general review of the rickettsia and the diseases with which they are associated. The organisms are described under the following headings :– morphology, staining reactions and types of rickettsia, localization of the parasite, transmission by insects, cultivation, filtration, resistance, pathogenicity for experimental animals, immunity and relationship to the X forms of proteus.

The diseases themselves are grouped under various headings. From the veterinary point of view, the most interesting sections deal with heartwater and ovine and canine rickettsias.

II. In this paper, attention is drawn to the confusion which has arisen in the attempted classification of the human diseases of the typhus and spotted fever group, owing to deductions having been drawn from incomplete data. There is no single criterion for the identification of these viruses, but cross-immunity tests are regarded as the most important. It is noted, however, that large numbers of animals must be used when strains of feeble virulence are being tested. Very little reliance is to be placed upon partial immunity, and the results of experiments in which this factor is implicated must be accepted with caution.

The severity of the reaction in the scrotal sac in g. pigs varies with different strains, and a study of smear preparations, with particular reference to the type of cell invader and the morphology of the organism, is of some value. Characteristic lesions, such as thrombo-necrosis of arterioles and venules with micro-organisms of definite morphology, are also to be found in the male generative organs, while the localization of the parasites in the mesothelial cells of the tunica vaginalis affords a valuable means of differentiating typhus from spotted fever.

P. lays particular stress on the changes induced in tissue cultures whereby the behaviour of different rickettsia towards the living cell is accentuated. The method of sectioning infected arthropods is also particularly useful for the demonstration of intranuclear organisms.

It is suggested that the well-established name *Rickettsia prowazeki* should be applied to the intracytoplasmic organisms in Insecta causing diseases of the typhus group, while *Dermacentroxenus rickettsi* should be reserved for the organisms in Arachnoidea which are responsible for the spotted fever group.—R. E. Glover.

FRENCH, M. H. (1936). **The Serum Protein Changes induced by Rinderpest Virus.**—*J. comp. Path.* **49.** 118-140. 21 tables. [17 refs.]

In this article data are given showing the changes in the serum proteins during the course of rinderpest. Infection was induced by the inoculation (subcut.) of 10 c.c. of virulent blood. The serum proteins were fractionated with sodium sulphate according to the method of HOWE, while the nitrogen estimations were carried out by means of a micro-Kjeldahl method.

It was found that in acute fatal infections (three cases) marked changes took place, mainly in the direction of a reduction in total globulin. In animals which made a spontaneous recovery, however, there was an initial fall in the euglobulin and pseudoglobulin fractions, with a subsequent increase as the crisis was passed, while the albumin changes were in the other direction. The fluctuations during immunization were also different from those observed in a fatal attack, and were similar to those described by HARTLEY. There was usually a large increase of the euglobulin fraction while the pseudoglobulin was frequently augmented. During the process of immunization a big increase was noted in the proteins insoluble in saturated NaCl, with a corresponding decrease in the NaCl-soluble globulins as the insoluble fraction approached its maximum value.—R. E. GLOVER.

TOUPAÏTCH, M. (1936). La prophylaxie de la peste porcine en Yugoslavie. [**Prophylaxis of Swine Fever in Yugoslavia**].—*Bull. Off. internat. Epiz.* **12.** 457-474. 2 tables. [11 refs.]

Since 1933, a system of prophylactic immunization has been practised generally in Yugoslavia. It has the approval of the Ministry of Agriculture and is, to a certain extent, state-aided. During the period 1931-1935 inclusive, serum-virus vaccination was carried out on 912,133 animals with a mortality of 7,894 (1 %). The author disagrees with MICHALKA, who holds that animals do not excrete virus for months after vaccination. Pregnant sows vaccinated in the second half of gestation are likely to abort.

Immunization by formol vaccine has been found unsatisfactory and has been abandoned in Yugoslavia. Serum-virus vaccination of sucking pigs is carried out on a large scale, but it constitutes a problem which has yet to be solved.—M. BURKE.

TRAUM, J. (1936). **Vesicular Exanthema of Swine.**—*J. Amer. vet. med. Ass.* **88.** 316-334. [13 refs.]

The nature of porcine vesicular exanthema has been dealt with in previous articles [*V. B.* **4.** 666, and **6.** 416 and 652].

In this paper, particular attention is paid to differential diagnosis and to methods of handling the disease. It is pointed out that, on account of the rigorous slaughter policy adopted in the U.S.A. in connexion with F. and M. disease, vesicular exanthema is of considerable importance, due to the confusion which may arise. It is extremely difficult on clinical grounds to differentiate between these diseases, although there is usually no systemic disturbance in exanthema and its spread to other pigs is not extensive.

For the differentiation of the two conditions, it is suggested that cattle, horses, pigs and g. pigs should be used. F. and M. disease is diagnosed if typical vesicular eruptions, preceded by a febrile reaction, are found in cattle, pigs, and g. pigs, but not in the horse; when all four species are affected, vesicular stomatitis is probably responsible; but when lesions are produced in pigs, less frequently, and to a milder degree in horses, and not at all in cattle and g. pigs, a diagnosis of porcine vesicular exanthema is justifiable.

With regard to the control of the disease it is stated that, in certain outbreaks,

slaughter of all animals was practised, but that in other cases the measures advocated in vesicular stomatitis were applied, *viz*, the quarantine of all animals and prohibition of movement for 30 days. After the disease had subsided, permission was granted for pigs to be sent for slaughter. Preliminary experiments on the immunization of non-infected pigs by the intramuscular injection of virus were unsatisfactory.
—R. E. GLOVER.

PANISSET, L. (1936). Méningo-encéphalo-myélite du cheval. Encéphalite enzootique, encéphalo-myélite infectieuse, maladie de Borna. [**Equine Meningo-Encephalomyelitis (Enzootic Encephalitis, Infectious Encephalomyelitis, Borna Disease)**].—*Rev. gén. Méd. vét.* **45.** 193-207 and 257-277. 8 figs. [Numerous refs.]

This is a valuable review of infections in the horse that cause meningo-encephalomyelitis. The virus disease, *e.g.* encephalomyelitis, as well as Borna disease and also the "cornstalk" disease not due to a virus and described by GRAHAM [*V. B.* **6.** 311.] are all considered. There is some evidence that the first two have something in common and it is well known that there is a close aetiological connexion between the Argentine encephalomyelitis and the eastern and western types of encephalomyelitis in North America.

The diseases under review are dealt with jointly under suitable headings (nature of the virus, animals susceptible, pathogenesis, etc.) and the data collected are very useful to workers on these diseases.—J. E.

I. KAPITANAKI, M., KAPUSTIN, N., & PISAREV, E. (1935). O nekotorich metodach diagnostiki encefalomielita lošadej. [**Methods of Diagnosis of Equine Encephalomyelitis**].—*Sovyet. Vet.* No. 5. pp. 29-32. [French summary].

II. FRIEDMAN, A. P., ŠOCHOR, N. I., GLINKA-ČERNORUCKAJA, E. L., PEBROVA, V. V., ARKINA, R., ALEKSANDROV, B. A., ZARJADOVA, E. A., & POGONAJLO, G. F. (1935). K voprosu ob izmenenii likvora i krovi pri eksperimentalnom encefalomielite lošadej. [**Changes in the Cerebrospinal Fluid and in the Blood in Equine Encephalomyelitis**].—*Ibid.* No. 12. pp. 39-43. 2 tables.

III. AMPHITHÉATROFF. (1935). Materiali po izuceniju epizooticeskogo encefalomielita lošadej v Tatarii. [**Equine Encephalomyelitis in the Tartar Republic**]. —*Ibid.* No. 7. pp. 14-25. 5 figs., 1 table. [French summary].

I. The authors give the results of tests for bilirubin in the blood and for bile pigment in the urine in a number of affected horses. They consider that hyperbilirubinaemia in horses is constantly found in equine encephalomyelitis, and that it occurs before the appearance of bile pigment in the urine.

Tables are given showing the figures for bilirubin in the blood of a number of observed horses, and the percentage of observed horses with excess of bilirubin in their blood which, after testing, developed equine encephalomyelitis.

II. Some constituents of the blood and cerebrospinal fluid were investigated in four horses which were experimentally infected by subdural inoculation with the virus of equine encephalomyelitis. The blood showed traces of bilirubin and glutathion, and the Ca content varied, while the pH showed a slight change towards acidity. The cerebrospinal fluid showed abnormal amounts of albumin and globulin, an increase in sugar and a decrease in the alkali reserve. The pH figure and the Ca content were also high. [According to MAREK – (1937). Klinische Diagnostik. Jena: Fischer. p. 482. – healthy horses have from 0·0194 to 0·031 mg. % of bilirubin in their blood serum: it is not clear how this compares with the results of the authors of the paper above].

III. A. found that equine encephalomyelitis was more prevalent in the south and that the incidence gradually decreased towards the north of the Tartar republic. The proportion of natural recoveries appeared to be proportional to the quality of the feeding and general management.

I. Remlinger, P., & Bailly, J. (1936). La maladie d'Aujeszky se transmet-elle par morsure ? [**Is Aujeszky's Disease Transmitted by Bite ?**]—*Bull. Acad. vét. Fr.* **9.** 192-199. [2 refs.]

II. Tscherniak, W. Z., & Rastegayewa, A. M. (1936). Observations sur la maladie d'Aujeszky. [**Aujeszky's Disease**].—*Rec. Méd. vét.* **112.** 461-467.

I. The submaxillary and parotid glands from g. pigs, which had died from an intracerebral injection of Aujeszky's disease virus, were freed from blood and injected into normal animals. In most instances both glands were infective. The salivary secretion from infected animals sometimes contained the virus, although this was not always the case : nevertheless, it proved impossible, under experimental conditions, to transmit the disease by the bites of infected animals.

II. The authors report the isolation of the virus of Aujeszky's disease from a number of cattle, dogs and cats brought to Leningrad. The nature of the infecting agent was established by the inoculation of suitable laboratory animals.—R. E. G.

Bisbocci, G. (1936). Contributo allo studio della gastro-enterite infettiva dei gatti. Relazione fra alterazioni anatomiche e germi d'irruzione secondaria. [**Infectious Gastro-Enteritis in Cats**].—*Nuovo Ercol.* **41.** 196-203.

It has been suggested [*V. B.* **6.** 337.] that infectious gastro-enteritis of cats is primarily due to a filtrable virus, but that organisms of the *coli*-typhoid group are mainly responsible for producing the lesions. B. has now examined a large number of cases of the disease and his previous findings have been confirmed. He found that there is a definite relationship between the lesions seen on *post-mortem* examination and the secondary invader present. The most common organisms were types of *Bact. coli* which were always associated with extensive necrotic foci in the liver, spleen and intestine.

These organisms were isolated from the liver, kidneys, spleen, lymph nodes, heart muscle and lungs. They were never recovered from cats which had died from certain other disease.—J. A. Nicholson.

I. Glover, R. E. (1936). **Contagious Pustular Dermatitis of Sheep : Vaccination.**—*Rep. Inst. Anim. Path. Univ. Camb., 1934-1935.* pp. 1-15. 6 tables. [Numerous refs.]

II. Gillain, J. (1936). L'ecthyma contagieux des lèvres, forme oculaire. Pouvoir infectieux du sang. [**Occular Form of Contagious Ecthyma and Infectivity of the Blood**].—*Ann. Méd. vét.* **81.** 209-212. [4 refs.]

I. A field investigation was undertaken in order to assess the value of vaccination against contagious pustular dermatitis. The vaccine selected for this purpose was prepared from a suspension of dried scabs of a modified strain, in 25% glycerin, to make a dilution of 1 : 500. It was applied to scarified areas on the thighs.

The results of these field trials were not quite so striking as those reported by former investigators. Thus out of 1,870 vaccinated animals, 6·8% subsequently contracted the disease when exposed to natural infection, whereas the incidence in 2,420 controls was 11·6%. It may be noted, however, that, in the opinion of many owners, the lesions in the protected animals were mild, and did not occasion the loss in condition which was common in the controls.

The use of the vaccine in an attempt to control outbreaks of " malignant aphtha " in very young lambs was not particularly successful, on account of the rather severe vaccinal lesions which were often produced. No evidence could be obtained, at any rate under laboratory conditions, of a transference of immunity from vaccinated ewes to their offspring.

Attempts were made to induce immunity with virus suspensions inactivated by heat, formalin or irradiation in the presence of methylene blue, and by serum-virus mixtures. The results were not encouraging.

II. G. describes an outbreak of contagious pustular dermatitis in the goat, in which the chief lesions were confined to the eyes. Affected animals showed a purulent conjunctivitis, which was often succeeded by keratitis and ulceration.

The nature of the infecting agent was established by cross-immunity experiments in animals which had recovered from the buccal form of the disease. The presence of the virus in the blood at the height of the infection was manifested by the inoculation of large doses (up to 200 c.c.) into susceptible animals.

ISABOLINSKI, M., LEWZOW, I., & TSCHERNJAK, I. (1935). Ueber die Züchtung des Pocken- und des Lyssavirus auf Hefenährboden. [**The Cultivation of Pox and Rabies Virus on Yeast Culture Media**].—*G. Batt. Immun.* **14.** 111-116. [In German: English, French and Italian summaries].

It has been shown that the pathogenicity of bacteria may be altered by growing them in symbiosis with certain non-pathogenic viruses, and the authors wished to study the reverse effect. For this purpose, pox and rabies viruses were grown in broth containing yeast and their virulence was tested on rabbits and g. pigs. Control cultures in broth without the addition of yeast were made at the same time. It was found that it was possible to produce keratitis in rabbits and g. pigs with the 17th to 20th generation of pox virus, and death in a limited time in rabbits with the 16th generation of rabies virus, only when these were grown in symbiosis with yeast. The pox cultures retained their virulence for four to five months at room temperature.—J. A. NICHOLSON.

GRAHAM, R., & BARGER, E. H. (1936). **Summary of Studies on Fowl Pox.**—*Vet. Med.* **31.** 78-81.

Results are given of the laboratory and field studies carried out by the Illinois Agricultural Experiment Station since 1926. It is claimed that fowl pox virus confers a relatively high degree of immunity although a decrease in egg production and an occasional fatal reaction may follow its use. Conflicting results were obtained with a saponinized fowl pox virus. Formolized virus failed to produce any immunity.

Details are given of experiments with pigeon pox virus, with special reference to its keeping properties under various conditions. The feather follicle method with this virus confers a measurable degree of immunity, but the " stick method " is unsatisfactory.

de Blieck's antidiphtherin produced a similar reaction and resistance to pigeon pox virus. Fowl pox virus failed to protect pigeons against artificial exposure to pigeon pox. Vaccine virus had no immunizing value against fowl pox and vaccination of day-old chicks with fowl pox virus caused a heavy mortality.
—F. H. MANLEY.

GILBERT, S. J., & SIMMINS, G. B. (1936). **Notes on a Minor Outbreak of Cell Inclusion Disease.**—*J. comp. Path.* **49.** 148-150. 1 table. [4 refs.]

Difficulty was experienced in establishing the infective agent in certain minor

outbreaks of cell inclusion disease. The virulence was eventually raised by very rapid passage through fowls, the birds being killed 24 hours after injection. Further observations on the fragility of the virus in glycerin are reported.

The authors do not subscribe to the belief that cell inclusion disease is an atypical form of fowl plague [see also *V. B.* **2.** 445 and **5.** 76].—R. E. GLOVER.

THORP, F., JR., & GRAHAM, R. (1936). **Transmission Studies in [Fowl] Leucemia.** —*Vet. Med.* **31.** 82-85. 2 figs., 1 table, 1 photograph.

Transmission was attempted by artificial inoculation, feeding and contact with soil where birds affected with leucaemia were kept. Blood counts were made prior and subsequent to the experiments. The original should be referred to for the experimental data. T. and G. conclude that the disease was infective but its occurrence in some of the control groups invalidates some of the work.—F. H. M.

MARTIN, C. J. (1936). **Observations on** *Myxomatosis Cuniculi* **(Sanarelli) made with a View to the Use of the Virus in the Control of Rabbit Plagues.**—*Bull. Coun. sci. industr. Res. Aust.* No. 96. pp. 28. 2 figs., 1 table, 4 charts, 1 appendix. [Numerous refs.]

Although rabbits infected with myxomatosis often sneeze, the infection seldom spreads to other rabbits kept in cages only six inches away, even when flies are prevalent. However, the disease spreads readily from one rabbit to another when they are kept in the same cage. Four experiments were carried out in order to observe the spread of the disease in colonies of rabbits in an open compound. In the first two experiments, a virus of relatively low virulence was introduced and 48 out of 52 rabbits died. In the two later experiments, a more virulent strain of virus was used and colonies of 55 and 44 rabbits were exterminated in 41 and 35 days respectively.

Out of a total of 208 rabbits infected with the virulent virus by contact, only one survived. There was no indication of loss of virulence with this strain during its maintenance for 15 months by serial contact infections. A few rabbits recovered from the less virulent strain and these acquired an immunity to the disease. Their progeny, however, showed no resistance.

The susceptibility of a number of domestic and other animals to the virus has been tested, but to date the European rabbit (genus *Oryctolagus*) is the only animal which it has been possible to infect. It is considered that the virus satisfies the requirements of a disease for use in attempting to control the rabbit pest.

In an appendix the author describes experiments conducted to determine the relationship of the virus of myxomatosis to that of Shope's tumour. It was found that rabbits recovered from myxomatosis were immune to the virus of Shope's tumour and *vice versa*. It is suggested that the myxomatosis virus originated from that of Shope's tumour.—W. I. B. BEVERIDGE.

MOHS, H. (1936). Die Psittakoseuntersuchungen für den Medizinalbezirk Leipzig. [**Psittacosis Enquiry in the Medical District of Leipzig**].—*Zlb. Bakt. I.* (*Orig.*). **136.** 97-109. 4 figs., 3 tables. [15 refs.] [Copied *verbatim* from *Bull. Hyg., Lond.* **11.** 697. Signed R. LOVELL].

In April 1935 the head and an assistant of the Pathological Institute of a Leipzig hospital died from psittacosis.

This article deals with the work carried out on psittacosis cases in their district and the efforts made to trace the origin of human cases. Of 118 birds examined from March to June 1934, 17 were infected with the virus of psittacosis, whilst of 106 examined between September 1934 and March 1935 only two were infected.

There is apparently no difference in sex regarding the incidence of the disease.

Attention is drawn to the enlarged spleen in infected birds ; spleens less than 3·5 mm. in diameter were never infective whilst the infected ones were from 5 to 8 mm. in diameter. After passage through mice, the virus was lethal even in high dilutions ; intracellular elementary bodies being found on section. The number of bodies found and the number of cells containing them is approximately proportional to the intensity of the macroscopic findings in mice.

Especial attention is drawn to the danger of working with psittacosis virus, but protection can be afforded by suitable clothing and a mask containing a carbon and cotton-wool filter. Rubber aprons, gloves and gum boots should also be worn. That portion of the laboratories used for psittacosis work should be separate, closed preferably by a double lock and scrupulous care paid to the sterilization of clothing and instruments. Thorough disinfection should be carried out and the atmosphere should be moist and free from dust.

I. Burnet, F. M. (1936). **Laboratory Investigation of Suspected Psittacosis.** —*Med. J. Aust.* March 14th. 363-364.

II. Ross, F. C. H., & Rabinov, L. (1936). **A Local Epidemic of Human Psittacosis in Australia.**—*Ibid.* 364-366. 2 figs. on 1 plate, 2 charts.

III. Kennedy, G. J. (1936). **Psittacosis in Man.**—*Ibid.* 366-367. 1 fig. on 1 plate.

I. In acute psittacosis of cockatoos, subacute pericarditis and inflammation of the air-sac linings are almost invariably present ; there is usually a moderate enlargement of the spleen. A suspension made from the spleen should be inoculated intraperitoneally into mice. If the mice become obviously sick they should be killed. Subacute lesions of peritonitis with fibrino-purulent accumulations in the sub-phrenic regions and around the spleen are characteristic of infection with the Australian strains of psittacosis. Smears should be made from this exudate and stained by Castaneda's method. Diagnosis of psittacosis is based on the finding of L.C.L. bodies, which are usually present in small clumps within mononuclear cells [*V. B.* **5.** 353].

II. Seven cases of psittacosis in man in Australia are described clinically. The diagnosis was confirmed by laboratory investigation of sputum from at least one of the patients. All patients had been in contact with sulphur-crested cockatoos, some of which had been sick and some of which died. The diagnosis of psittacosis in the birds was also established by laboratory investigation.

III. A description of a case of psittacosis in man, contracted from infected budgerigar parrots.—W. I. B. Beveridge.

PARASITOLOGY (GENERAL).

I. Roberts, F. H. S. (1934). **The Animal Parasites of Domesticated Animals and their Control.**—*Anim. Hlth Sta. Dep. Agric. Qd adv. Leafl.* No. 1. pp. 9. [Also appeared in *Qd agric. J.* **42.** 34-42].

II. Roberts, F. H. S. (1934). **Parasites of the Pig.**—*Anim. Hlth Sta. Dep. Agric. Qd adv. Leafl.* No. 2. pp. 13. 9 text figs., 2 figs. on 1 plate. [Also appeared in *Qd agric. J.* **42.** 208-221].

III. Roberts, F. H. S. (1934). **The Parasites of Sheep.**—*Anim. Hlth Sta. Dep. Agric. Qd adv. Leafl.* No. 3. pp. 21. 9 text figs., 13 figs. on 2 plates. [Also appeared in *Qd agric. J.* **42.** 337-359].

IV. Roberts, F. H. S. (1934). **Parasites of the Horse.** -*Anim. Hlth Sta. Dep.*

Agric. Qd adv. Leafl. No. 5. pp. 17. 12 figs. [Also appeared in *Qd agric. J.* **42.** 473-489].

V. ROBERTS, F. H. S. (1934). **Parasites of Cattle.**—*Anim. Hlth Sta. Dep. Agric. Qd adv. Leafl.* No. 7. pp. 16. 12 figs. [Also appeared in *Qd agric. J.* **42.** 674-689].

VI. ROBERTS, F. H. S. (1935). **Parasites of the Dog and Cat.**—*Anim. Hlth Sta. Dep. Agric. Qd adv. Leafl.* No. 8. pp. 18. 11 figs. [Also appeared in *Qd. agric. J.* **43.** 18-35].

This is a series of pamphlets written in popular language for animal owners. Both internal and external parasites are discussed.

I. There are brief notes on the various groups of parasites, together with information regarding their host range, economic importance, and control by treatment and prophylaxis.

II. The following parasites, together with their life-histories, methods of treatment, and control are described :– *Haematopinus suis*, *Sarcoptes scabiei suis*, *Demodex phylloides*, *Arduenna* (*Ascarops*) *strongylina*, *Ascaris lumbricoides*, *Macracanthorhynchus hirudinaceus*, *Trichuris trichiura*, *Oesophagostomum dentatum*, *Metastrongylus* spp. and *Stephanurus dentatus*. There is a discussion on general principles of sanitation and on the administration of vermifuges to pigs and natural sized photographs of most of the parasites are given.

III. Parasites of sheep are described and illustrated by natural-sized photographs, etc. Life-histories and methods of control are discussed. The following parasites are dealt with :– *Bovicola ovis* (*Trichodectes sphaerocephalus*), *Linognathus pedalis*, *Melophagus ovinus*, *Ixodes holocyclus*, *Lucilia cuprina*, *Calliphora* spp., *Chrysomyia* spp., *Microcalliphora varipes*, *Sarcophaga froggatti*, *Peronia rostrata*, *Oestrus ovis*, *Moniezia* spp., *Fasciola hepatica*, *Haemonchus contortus*, *Ostertagia circumcincta*, *Trichostrongylus* spp., *Oesophagostomum columbianum*, *Trichuris ovis* and *Dictyocaulus filaria*.

IV. Parasites of horses are described and illustrated. Life-histories and methods of control are discussed.

The following parasites are dealt with :– *Haematopinus asini*, *Trichodectes pilosus*, *T. equi*, *Sarcoptes scabiei equi*, *Psoroptes communis equi*, *Chorioptes equi*, *Gastrophilus intestinalis*, *G. nasalis*, *G. haemorrhoidalis*, *Anoplocephala* spp., *Habronema* spp., *Trichostrongylus axei*, *Ascaris equorum*, *Strongylus* spp., *Trichonema* spp. and *Oxyuris equi*.

V. Parasites of cattle are described and illustrated. Life-histories and methods of control are discussed.

The following parasites are dealt with :– *Haematopinus eurysternus*, *Linognathus vituli*, *Bovicola bovis*, *Boophilus microplus*, *Lyperosia exigua*, *Paramphistomum cervi*, *Fasciola hepatica*, *Moniezia* spp., *Echinococcus granulosus*, *Haemonchus contortus*, *Ostertagia ostertagi*, *Bunostomum* (*Monodontus*) *phlebotomum*, *Oesophagostomum radiatum*, *Dictyocaulus viviparus* and *Onchocerca gibsoni*.

VI. Parasites of dogs and cats are described and illustrated. Life-histories and methods of control are discussed.

The following parasites are dealt with :– *Trichodectes canis*, *Linognathus setosus*, *Sarcoptes scabiei canis*, *Notoedres cati*, *Demodex canis*, *Otodectes cyanotis*, *Rhipicephalus sanguineus*, *Ixodes holocyclus*, *Ctenocephalides canis*, *C. felis*, *Toxocara canis*, *T. mystax*, *Toxascaris limbata*, *Ancylostoma caninum*, *Trichuris vulpis*, *Dirofilaria immitis*, *Echinococcus granulosus*, *Dipylidium caninum*, *Taenia hydatigena*, *T. taeniaeformis* and *Diphyllobothrium mansoni*.—H. McL. GORDON.

PARASITES IN RELATION TO DISEASE (ARTHROPODS).

ROBERTS, F. H. S. (1935). **Our Present Knowledge of the Association of Insects with Disease.**—*Pamphl. Anim. Hlth Sta. Dep. Agric. Qd.* No. 4. pp. 8. [Also appeared in *Qd agric. J.* **44.** 409-416].

This is a comprehensive summary of the more important insect-borne diseases. The term insect is used in its broad sense, to include mites and ticks. The summary is divided into six sections according to whether the diseases are (1) directly attributable to insects ; (2) of unknown origin ; (3) of virus origin ; (4) of bacterial origin ; (5) of protozoan origin, or (6) of helminth origin. It is a useful summary for students.—H. McL. GORDON.

ARTJUCH, E. (1936). Rasprostranenie klescej iz sěm. Ixodidae v USSR. [**The Incidence of Ixodidae in the Ukraine**].—*Uchen. Zap. Vitebsk vet. zoo. Inst.* **3.** 195-200. [10 refs.] [German summary].

The following observations were made (tick, host, season, locality) :- *Ixodes ricinus* (horse, ox, dog, cat), March and September, Ukraine (throughout) ; *Dermacentor silvarum* (cattle), May and June, Ukraine (here and there) ; *D. reticulatus* (horse, dog), April to June, Ukraine (here and there) ; *Rhipicephalus bursa* (cattle), May and June, Ukraine (Charkov) ; *R. rossicum* (cattle), June, Ukraine (Charkov) ; *Hyalomma volgense* (cattle), February to June, Ukraine (here and there) ; *H. aegyptium* (cattle), February and March, Black Sea (north coast) ; *Haemaphysalis punctata* (cattle), May to July, Ukraine (Charkov).

STICKDORN, Hildegard. (1936). Versuche zur Uebertragung von Rotlaufbacterien durch die Schweinlaus (Haematopinus suis). [**The Pig Louse** (*H. suis*) **as a Carrier of** *Erysipelothrix rhusiopathiae* (**Swine Erysipelas Bacillus**)].—*Z. Parasitenk.* **8.** 492-503. 1 table. [18 refs.]

Transmission experiments with *E. rhusiopathiae* in mice showed that the pig louse, *H. suis*, if fed on infected mice, harboured living *E. rhusiopathiae* in its alimentary tract and excreta 24 hours later. Inoculation of the emulsified alimentary tract and of a suspension of excreta produced infection in mice, and no evidence was obtained of attenuation of virulence by passage through the louse. Cutaneous infection of mice, artificially or by the bite of infected lice, was not obtained.

The possibility of lice acting as vectors of infection in pigs is discussed and it is pointed out that, although direct transmission by lice is improbable, the possibility remains that susceptible pigs may acquire infection by eating infected lice. Dissemination of bacteria is possible both by the lice themselves and through their excrement.

S. records some observations on the biology and habits of the louse.—J. MACL.

JENSEN, E. A. (1936). Bekaempelsen af oksebremsen. [**Control of Ox Warbles in Denmark**].—*Maanedsskr. Dyrlaeg.* **47.** 625-631. [2 refs.]

A discussion of the organization of the campaign against ox warbles.

—H. C. BENDIXEN (COPENHAGEN).

I. MILLER, W. C. (1935). **Some Observations on the Prevention of Blow-Fly Attack in Sheep.**—*Scot. J. Agric.* **18.** 226-231. 1 fig. [Also appeared in *Vet. J.* **91.** 464-469].

II. EVANS, A. C. (1935). **Some Notes on the Biology and Physiology of the Sheep Blowfly, Lucilia sericata, Meig.**—*Bull. ent. Res.* **26.** 115-122. 5 figs., 4 tables. [7 refs.]

III. ANON. (1936). **Bracken as a Weed [Relation to Blowfly].**—*Nature, Lond.* **138.** 706-707. [2 refs.]

I. It was found that standard dips protected sheep from blowfly attack for not more than a fortnight and, under favourable weather conditions, for about seven days. Good results were obtained by the use of phenolic dips applied as a fine spray. A concentration of from two to three times the ordinary bath strength was used, the spray being directed horizontally from a powerful garden syringe, so as to fall as a mist on the backs of the penned sheep. Two gallons of fluid were sufficient for 100 sheep. The spraying was repeated weekly in bad weather or when the fleeces were short. Ordinarily, an interval of from 10 to 14 days was sufficient.

Brown-woolled sheep, and especially pure-bred shetlands, were markedly less susceptible to attack than were white-woolled sheep. The immunity was not transmitted to the white progeny of a brown ewe.

II. E. records observations on the weight changes of newly emerged *Lucilia sèricata* flies fed on various diets, and advances a theory of the probable function of the abdominal air-sacs.

III. The interest of this article is in emphasis made to the habit of "fly struck" sheep lying hidden in bracken. The spread of this fern may therefore tend to complicate the blowfly problem.—J. MACLEOD.

PULLAR, E. M. (1936). **A Note on the Occurrence of Linguatula serrata (Frohlich, 1789) in Australia.**—*Aust. vet. J.* **12.** 61-64. [18 refs.]

The literature regarding the presence and distribution of *L. serrata* in Australia is reviewed. Nymphs of this parasite are commonly seen in the visceral lymph nodes of cattle, but adults appear to be extremely rare, there being very few records of their occurrence in dogs. It is suggested that the parasite is propagated in Australia principally by fox – rabbit – fox passage, infestation of cattle being only incidental.—H. McL. GORDON.

I. DOWNING, W. (1936). **The Life-History of *Psoroptes communis* var. *ovis* with Particular Reference to Latent or Suppressed Scab.**—*J. comp. Path.* **49.** 163-180 and 183-209. 8 figs., 10 tables, 3 charts. [10 refs.]

II. DOWNING, W. (1936). **The Life-History of the Scab Mite in Relation to Control Measures.**—*Vet. Rec.* **48.** 1065-1067.

III. ROSENWALD, A. S. (1936). **Sheep Scabies and Navajo Indians.**—*Vet. Med.* **31.** 163-170. 17 photographs.

I. The life-history of the sheep scab mite, *Psoroptes communis* var. *ovis*, in England was found to show no significant variation at different seasons, and occupied from 10 to 12 days. In view of the fact that the egg stage is resistant to ordinary control measures, necessitating two dippings of infected sheep, the minimum period between hatching and oviposition is important. This was found to be eight days. Males, however, took from 10 to 11 days to reach the copulatory stage, so that, since the parent generation males would be killed by the first of two dippings, eggs would not be laid by the first filial generation females until the males of the same generation had matured, *i.e.* until at least ten days after the first dipping. [Statutory regulations require an interval of 10 to 14 days between dippings].

Continuous observations were made of the course of infection in several sheep infected at different seasons. Sheep which acquired infection in spring or early summer continued to show symptoms of infection throughout the summer, but the disease progressed very slowly until the approach of winter. Sheep which

showed active scab in winter underwent in the following summer a spontaneous apparent recovery. This was sometimes complete, but most cases relapsed in the following autumn. Careful search of these latent cases in summer always revealed the presence of mites, usually in the infra-orbital fossae, inguinal folds, or on the scrotum or tail. The absence of lesions appeared to be due to a marked reduction in activities and rate of reproduction of the mite. This is apparently correlated with air temperature.

There was no essential difference between active scab, slowly progressive scab, and latent scab, the determining factor being the rate of reproduction of the female. In latent cases there were no gross differences between those which ultimately cleared up and those which later relapsed, the difference being apparently a matter of degree in the reduction of the mite population through lowered reproduction and increased mortality from adverse environmental causes.

The fact that apparently clean sheep introduced into a flock in summer may relapse to active cases of scab in autumn is suggested as a possible explanation of outbreaks in flocks which have not been in contact with known sources of infection.

II. D. summarizes the information in the foregoing paper, and points out that, at present, statutory regulations require the dipping of sheep for scab control at a season (July-August), when the mites are relatively inaccessible, being in the infra-orbital fossae and inguinal folds, under a crust of dried secretions. Dipping, therefore, unless supplemented by hand-dressing, is less likely to be effective than if carried out in September – November, when the mites have migrated to the general body surface.

III. An account of operations to control the disease in a Red Indian community.—J. MacLeod.

Maw, W. A., Whitehead, W. E., & Bemont, L. H. (1935). **The Northern Fowl Mite and its Control.**—*Sci. Agric.* **16.** 79-84. 1 text fig., 2 figs. on 1 plate, 3 tables. [4 refs.]

In Canada the fowl mite, *Liponyssus sylvarium*, causes serious losses to poultry farmers in autumn and winter. In summer the mites leave their hosts to aestivate. The complete life-cycle is passed on the host, and is believed to take from 8 to 12 days. Male birds were found to be more susceptible to heavy infestation than were females. Distribution of the mite may occur to some extent through the agency of wild birds, 14 species of which were found to harbour specimens.

A naphthalene ointment was found satisfactory as a dressing, but the more volatile *p*-dichlorobenzene should be used instead in cold weather. Mites off the hosts are very resistant to adverse conditions. It was found that pens could be disinfected by spraying with tar-oil emulsions at concentrations of 5 and 10 %.

—J. MacLeod.

PARASITES IN RELATION TO DISEASE (HELMINTHS).

I. Penfold, W. J., Penfold, H. B., & Phillips, Mary. (1936). **A Survey of the Incidence of Taenia saginata Infestation in the Population of the State of Victoria from January, 1934 to July, 1935.**—*Med. J. Aust.* Feb. 29th. 283-285. 1 table.

II. Penfold, W. J., & Penfold, H. B. (1936). **The Diagnosis of Taenia saginata Infestation.**—*Ibid.* March 7th. 317-321. 8 figs. [6 refs.]

III. Penfold, H. B. (1936). **The Treatment of Patients Infested with Taenia saginata, with Special Reference to Certain Unusual Results.**—*Ibid.* March 21st. 385-398. 1 fig., 4 tables. [Numerous refs.]

IV. PENFOLD, W. J., PENFOLD, H. B., & PHILLIPS, Mary. (1936). **Acquired Active Immunity in the Ox to Cysticercus bovis.**—*Ibid.* March 28th. 417-423. 8 figs. [5 refs.]

I, II & III. The matter pertains to the human patient. The extent of infestation found is discussed, along with methods of diagnosis and of treatment.

IV. It has been shown that cattle can be immunized against infestation with *C. bovis*. All of four animals that had received a primary infestation were immune to a secondary infestation, although a large dose of ova was used. Control animals developed heavy infestations. Confirmation of the immunity to *C. bovis* was obtained at the *post-mortem* examinations of three-year-old cattle grazing on a sewage farm. Of 641 cattle which had grazed on the farm for six months, 46% were infested. Of 171 cattle which had grazed on the farm for 15 months, 33% were infested. Of 79 cattle which had grazed on the farm for three years, 14% were infested.

Possible methods for the practical application of the immunity are discussed.

—H. McL. GORDON.

SOŁTYS, M. (1936). Przyczynek do rozpoznawania wągrzycy mięsa swin zapomocą odczynu strącania (precipitacji). [**Precipitation Test for the Diagnosis of Cysticercosis of Pork**].—*Przegl. wet.* **49.** 393-410. 4 tables. [17 refs.] [German summary].

Trawinski's precipitation reaction gave positive results in 50 cases of cysticercosis of pork kept from one to four days at +16°C., 92% being positive during the first three days and 70% on the fourth day. In 50 samples of the same pork kept from two to eight days at +4°C., the reaction was positive in 74% on the second day and 96% on the seventh day.—A. SZWABOWICZ (Lwów).

BELKIN, G., & ŠLECER, A. M. (1936). K gistologii metastrongileznich poraženij legkich u svinej. [**The Histology of Metastrongylosis in Swine (Lungworms)**].—*Uchen. Zap. Vitebsk vet. zoo. Inst.* **3.** 109-118. [12 refs.] [German summary].

B. and S. examined histologically the lungs of 140 sheep affected with metastrongylosis caused by *Metastrongylus elongatus* and *Choerostrongylus pudentotectus*, both of which are common in White Ruthenia, generally together in the same animal.

Three types of lesion were found, depending upon the site of infestation (bronchi, lung tissue or pulmonary lymph nodes). In the first type examined histologically, worms and their eggs were found in the bronchial tubes, together with cell debris, and the lining membrane was not inflamed. There was extensive hyperplasia of the lymph follicles and some degree of peribronchitis.

In the lesions seen in the lung tissue, eggs and, less often, worms were found in the alveoli and the epithelium was swollen. There was considerable perivascular infiltration, and some giant cells were present.

The lymph node lesions showed three zones, as a result of the penetration by the parasites. In the centre there were the remains of the parasites, surrounded by granular masses stained deeply with haematoxylin. Next came the broad zone containing leucocytes and, beyond this, a zone containing layers which took eosin stain. The lymph node capsules were thickened.

EDGAR, G. (1936). **Fatal Effect of Heavy Infestation with Cooperia curticei (Railliet, 1893) in Goats.**—*Aust. vet. J.* **12.** 58-61. [4 refs.]

E. describes a mortality in Saanen goats on coastal areas. This is attributed to gross infestation with *C. curticei*, a not uncommon ovine parasite in New South

Wales. In one case, 30,000 of these parasites were present in a three-year-old animal. The characteristic symptom is diarrhoea followed by emaciation. Treatment with tetrachlorethylene gave very poor results. Goats of all ages were affected in the outbreak described.

These goats are bred in western areas where the climate is hot and dry and the average annual rainfall is 17 inches. Many are imported into coastal areas in the neighbourhood of Sydney, where the annual rainfall is 48 inches. In the western areas heavy infestation with helminth parasites is rare, hence little resistance is developed. Under coastal conditions, which are favourable to infestation, even aged goats proved susceptible.—H. McL. Gordon.

Roth, H. (1936). Er der mulighed for praenatal overgang af trikiner dra moder til foster? [**The Possible Prenatal Transmission of Trichinae from Dam to Foetus**].—*Maanedsskr. Dyrlaeg.* **48.** 19-25.

Pregnant g. pigs were fed with *Trichinella spiralis*, and 22 new-born young or foetuses, from ten females, were examined. Nine of them (41 %) contained from 1 to 19 trichinae in the muscles. One contained 126 fully developed trichinae.

Technique.—After the removal of the skin and bowels, the foetuses and young were cut into small pieces and put into a solution of pepsin (1 %) and hydrochloric acid (0·2 %). After digestion the sediment was washed and then examined microscopically. The muscles of the dams were treated and examined in the same manner and 1,700 to 10,000 trichinae were found per g. of muscle.

—H. C. Bendixen (Copenhagen).

I. Heathman, Lucy S. (1936). **Laboratory Diagnosis in Trichinosis.**—*Amer. J. Hyg.* **23.** 397-409. 2 charts. [Numerous refs.]

II. Trawinski, A. (1936). Stellungnahme zu dem Artikel "Zur Frage der immunobiologischen Diagnose der Trichinose" von Hans Theiler und Donald L. Augustin aus Department of Comparative Pathology, Medical School and School of Public Health, Harvard University, Boston. [**Comment on Theiler and Augustin's Article on the Diagnosis of Trichinosis**].—*Zlb. Bakt. I. (Orig.).* **136.** 238-241. [7 refs.]

III. Roth, H. (1936). Ueber das Vorkommen pränataler Trichinenübertragung bei künstlich infizierten Meerschweinchen. [**Prenatal Injection with Trichinae Artificially Produced in the Guinea Pig**].—*Ibid.* 278-284. 1 table. [16 refs.]

I. After an extensive review of the literature on the subject, H. gives an account of her own observations on 55 human cases and 30 infected g. pigs. Skin tests, precipitin tests, eosinophile counts and muscle biopsies were carried out, and it was concluded that an eosinophile count, together with the examination of a portion of excised muscle and a study of the meat suspected of being the source of infection, is of the greatest value. Intradermal tests and precipitin tests were found to be of even less value in g. pigs than in man.

II. In this article T. reaffirms his opinion that antigens prepared with Coca's solution may give false positive reactions owing to the precipitating effect of the phenol which it contains [see also *V. B.* **6.** 440].

III. Intra-uterine infection succeeded in 9 out of 22 newly born g. pigs. In most instances the infections were small, 1 to 19 larvae being recovered but in one instance 126 larvae were recovered. Some larvae were found in the placenta of the mother, but none in the uterus itself. As such massive intra-uterine infection occurs with *Ascaris* and *Ancylostoma*, it is concluded that trichinae must be comparatively feeble tissue borers.—E. L. Taylor.

IMMUNITY.

I. TWEED, W. (1936). **The Double Intradermal Tuberculin Test.**—*Vet. Rec.* **48.** 758-759. 1 table.

II. FERAUGE, & MEIRHEAGHE. (1936). Rapport concernant les expériences pratiquées sur du bétail importé, se trouvant dans les étables de quarantaine du port d'Anvers. [**Tuberculin Testing of Animals Imported into Antwerp**].—*Ann. Méd. vét.* **81.** 199-208. 2 tables.

I. T. reports a series of comparative double intradermal tests with " O.T." and synthetic medium tuberculin. Of 36 animals tested in this manner, 26 gave positive reactions to both tuberculins : lesions were noted in 25 of these. Seven were entirely negative. No evidence of tuberculosis was found in four of the latter, two showed in each instance an inactive calcified lesion, and one revealed generalized tuberculosis. Two animals which were negative to synthetic medium tuberculin, but were doubtful to " O.T.", were free from visible lesions.

It is stated that the character of the swellings induced by the synthetic product facilitated the interpretation of the reactions when compared with " O.T."

II. A series of 40 animals was subjected to the double ophthalmic and double intradermal tuberculin tests. The results were identical except in one beast, which was positive to the ocular test but negative to the skin test. It is suggested that in practice the single intradermal method is sufficient, since all positive animals give some evidence of a response, but it is admitted that the second injection, by increasing the degree of the reaction, assists in the interpretation of the results.—R. E. G.

I. ZUWERKALOW, D. A., & SARKISSOFF, A. K. (1936). Un nouveau milieu nutritif pour la préparation de la tuberculine. [**A New Culture Medium for the Preparation of Tuberculin**].—*Ann. Inst. Pasteur.* **57.** 111-119. 2 tables. [Numerous refs.]

II. KUHLMANN, H. (1936). Ueber Tuberkulin und seine Auswertung. [**Standardization of Tuberculin**].—*Berl. tierärztl. Wschr.* **52.** 469-473. 2 figs., 4 tables. [6 refs.]

I. The aim in designing this medium was to exclude animal protein in order to avoid confusion with non-specific antigens. Potato is hydrolysed in sulphuric acid and the hydrolysate is filtered and diluted with distilled water. The reaction is then adjusted with potassium hydroxide to pH 7·1. Ammonium oxalate 0·05, glycerin 0·1, and phosphate buffer (pH 7·1) are then added. The medium is steam-sterilized for 30 minutes on two successive days. This medium is supposed to support a better growth of tubercle bacilli than meat broth. The tuberculin, when extracted, is less toxic for tuberculous g. pigs, but produces better skin reactions than tuberculin prepared from culture grown in the usual way.

II. K. has shown that, by dialysing tuberculin in running water, the ultimate dialysate is non-toxic for tuberculous g. pigs, but produces allergic skin reactions equal to those produced by the undialysed product. This indicates that tuberculin consists of a toxic and an allergic factor. Furthermore, the experiments showed that there was no constant relationship between the amounts of these two factors present in tuberculin. Consequently it is illogical to standardize tuberculin intended for intradermal inoculation according to its toxicity for tuberculous g. pigs ; for this purpose the product should be standardized by skin tests. It is suggested that the generalized reaction seen during the subcutaneous tuberculin test may be due to the toxic factor. If this is the case dilute tuberculin for use in the subcutaneous test should be standardized according to its toxicity.—E. J. P.

MEYER, K. (1936). Sur la nature des anticorps tuberculeux ; quelques particularités propres au cobaye. [**Tuberculous Antibodies in the Guinea Pig**].—*C. R. Soc. Biol. Paris.* **122.** 26-28. [2 refs.]

M. and PIC had previously shown that a rabbit inoculated with Besredka's antigen will develop antibodies specific to lipoids and protein.

M. now reports that the normal g. pig reacted in a similar manner to the rabbit. In the tuberculous g. pig, however, it was found that the specific antibodies to lipoids were often absent while those to protein, though present, were in a modified form requiring special methods for their demonstration.—C. DAVENPORT.

CALCINAI, M. (1935). Allergia bacterica e infezione sperimentale del polmone da pneumococco, streptococco e B. Bang. [**Bacterial Allergy and Experimental Infection of the Lungs with Pneumococci, Streptococci and** *Brucella abortus*].—*Boll. Ist. sieroter. Milano.* **14.** 401-418 and 522-536. 10 figs. on 3 plates, 3 tables. [Numerous refs.] [German summary].

In order to assess the significance of bacterial allergy in the pathogenesis of lobar pneumonia, C. studied the reactions produced in normal g. pigs by intratracheal injections of pneumococci, streptococci and *Br. abortus*, comparing them with the reactions produced when these organisms were given in the same manner to hypersensitive g. pigs.

The animals were sensitized with the organism to be tested, by means of intradermal injections, and were inoculated 15 days after the last sensitizing dose. They were then killed, after varying intervals, and material was taken from their lungs for histological examination. It was found that the type of inflammation set up by the different organisms in hypersensitive animals was essentially the same and that this inflammation is in no way characteristic of that seen in lobar pneumonia. C. concludes that the allergic theory of pneumonia causation in man must be accepted with reserve, and that it is unlikely that pneumonia occurs only in individuals sensitive to pneumococci.—J. A. NICHOLSON.

DISEASES, GENERAL.

REIS, J. (1934). Porque morrem os pintos ? [**Diseases of Fowls**].—*Folh. Inst. Biol. Def. agric., S. Paulo.* No. 49. pp. 94. 47 figs.

A popular booklet for poultry keepers, dealing with the incubation of eggs and with the common diseases of chicks and fowls.—J. E.

AMMAN, K. (1936). Ueber Neuritis caudae equinae. [**Neuritis caudae equinae**].—*Tierärztl. Rdsch.* **42.** 281-285. 5 figs. [10 refs.]

This condition has been recorded only in the horse. Clinically, it is characterized by paralysis of the tail and anal sphincter, dribbling of urine, and loss of sensibility of the tissues in the region of the tail and in certain muscles of the croup. Two cases are described, and in both an accurate study of the cutaneous innervation was made and compared with recently published results in normal animals. It was found that there existed complete or partial paralysis of certain sacral nerves. The cauda equina was thickened, and the nerve roots posterior to the second sacral were strands as thick as a pencil and adherent to one another. Histological examination of the spinal cord revealed proliferation of connective tissue and degeneration of the myelin sheaths of Burdach's column, as far forward as the sixth lumbar segment. The macroscopically affected voluntary muscles showed atrophy and degenerative changes.

The aetiology of the condition is not known; trauma possibly plays a part, and there was some evidence of this in one of the cases described.—E. G. WHITE.

HERTHA, K. (1936). Die Ursache und Enstehung der Kapillarektasien in der Leber der grösseren Haustiere. [**Capillary Ectasis of the Liver in the Large Domestic Animals**].—*Tierärztl. Rdsch.* **42.** 600-604. [2 refs.]

At the *post-mortem* examination of cows which had sustained injuries to the hind limbs, haemorrhage in relation to one or more of the intervertebral foramina was commonly found and, in addition, lesions in the liver, which were of two kinds. One resembled the commonly occurring capillary ectases [usually erroneously termed " cavernous haemangioma ", although possessing none of the characters of neoplasms]. The other lesion was not depressed below the surface of the liver; it was otherwise similar in structure to the former and was considered to represent an earlier stage in its development.

Experimentally, it was found possible to produce both types of lesion in cats under anaesthesia by forcible torsion of the lumbar vertebral column until slight tearing of an intervertebral articulation resulted. In animals killed seven days later, capillary ectases, already somewhat sunken, were found. The haemorrhage was completely absorbed between 7 to 21 days and the lesions then resembled even more closely those found in cattle. Lesions of the early type were also produced in cats by artificial stimulation of the 12th thoracic nerve, these nerves carrying vaso-dilator fibres to the liver capillaries.

It is concluded that capillary ectases in the livers of cattle are the result of damage to spinal nerves which carry vaso-dilator fibres to the liver capillaries. It is suggested that such injury is brought about in adult animals by slipping in the byre, service, etc., and that their occasional presence in calves is probably due to injuries at birth.—E. G. WHITE.

I. SALOMON, S. (1936). Leukose beim Zuchtbullen. (Zugleich ein Beitrag zur Pathologie des Hodens und Nebenhodens). [**Leucosis (Lymphadenosis of the Testes) in a Bull**].—*Berl. tierärztl. Wschr.* **52.** 376-377. 3 figs.

II. PIENING, C. (1936). Chronische Myelose beim Rinde. [**Chronic Myeloid Leucosis in a Cow**].—*Ibid.* 504-505. 2 figs. [4 refs.]

I. A case of testicular swelling in a five-year-old stock bull. There were associated symptoms of inappetence and impotence. At *post-mortem* examination the testicles were found to be enlarged, and to contain multiple foci of lymphoid tissue in place of the normal testicular tissues. Microscopic examination revealed extensive lymphoid hyperplasia.

II. A ten-year-old milch cow, which had previously been healthy, suddenly showed slight febrile disorder, associated with multiple swellings in the subcutis. At autopsy, changes were seen in the large intestine, sexual organs and skeletal muscles. These changes consisted of tumour formation, particularly in the lymphoid tissue, some tumours being of enormous size and showing central necrosis. In some places ulceration extended into the intestine. Histological examination revealed all stages of change from hyperplasia of normal lymphoid tissue to a condition in which the normal tissue was replaced by a network containing eosinophiles and myelocytes. These changes are detailed. A differential blood count revealed 38 % of eosinophiles and myelocytes and 47 % of myeloblasts. It is considered that the cellular development was due to metaplasia.—E. J. P.

GALLI, M. (1936). La pneumo-linfoadenite enfisematosa dei bovini. (Descrizione

clinica.) [**Emphysematous Pneumo-Lymphadenitis in Cattle**].—*Clin. vet., Milano.* **59.** 330-335. 2 figs. on 1 plate. [7 refs.]

Pneumo-lymphadenitis usually affects draught cattle and cows but is also occasionally seen in young animals. The onset of symptoms is gradual and begins with a harsh dry cough which may easily be overlooked. This becomes worse especially in the winter; in the summer, however, it may completely disappear. At first, the animal retains its condition and appears in reasonably good health, the only indication of the disease being that after exercise the rate of respiration takes an abnormally long time to return to normal. After some months, the animal rapidly becomes worse and death follows quickly. There is every sign of broncho-pneumonia but no excessive rise in temperature.

At *post-mortem* examination, peribronchitis and chronic interstitial pneumonia are seen, together with severe interlobular emphysema. The mediastinal lymph nodes are enlarged and haemorrhagic, and contain greyish-green nodules. Glomerular nephritis may be present and the liver and spleen are usually congested.

The aetiology of the condition is obscure but the disease is more common in animals which have previously had an attack of bronchitis.—J. A. NICHOLSON.

GALLI, M. (1936). Emoglobinuria da lavoro nei bovini. [**Haemoglobinuria in Draught Cattle**].—*Azione vet.* **5.** 222-224. [8 refs.]

G. records four cases of haemoglobinuria in draught cattle which presented essentially similar symptoms. After the animals had been at work for some time, muscular weakness developed and it was only with difficulty that they could be led home. A rapid pulse, sweating, and accelerated respirations were observed. The temperature was slightly raised but soon returned to normal; rumination was temporarily suspended. Haemoglobin was demonstrated in the urine but red blood corpuscles were always absent. After lying down for some hours, unable to rise, the animals completely recovered. The haemoglobinuria was not due to piroplasmosis and G. does not consider that the condition is similar to myohaemoglobinuria in horses.—J. A. NICHOLSON.

ANDERSSON, A. (1936). **On Amyloidosis of the Kidneys in Cattle.**—*Skand. VetTidskr.* **26.** 241-290. 8 figs. on 4 plates, 2 tables. [Numerous refs.] [In English: German and Swedish summaries].

The aim of this work is to give further proof that the lesions found in the so-called " large white kidneys ", so frequently recorded in cattle, are primarily an amyloid degeneration, as already indicated by PRIMGAARD [(1930). *Virchows Arch.* **274.** 111.] and HJÄRRE [*V. B.* **4.** 670.], and that these lesions in the kidneys are only one symptom of a general amyloidosis. Hitherto the general opinion has been that real amyloidosis in cattle is of rather rare occurrence. A. states that the reason for this is that the amyloid deposits are very often hidden by other alterations. He gives detailed descriptions of the histological findings in 36 cases, on which his conclusions are based. In cases where a thorough *post-mortem* examination was carried out, amyloid deposits were more or less regularly demonstrated in the adrenal bodies, spleen and lymph nodes, mucous membrane of the mouth, wall of the pharynx, all sections of the stomach and intestines, pancreas, lungs, heart and udder, as well as in the kidneys.

Although the iodine or the iodine-sulphuric acid reaction in some cases failed to demonstrate the presence of the amyloid substance, other accepted reactions such as methyl-violet, gentian-violet and congo-red always gave clear evidence of the amyloid.

The main part of the paper relates to the alterations of the kidneys. For the

sake of convenience of description the cases were divided into three groups, according to the magnitude of the changes, *viz*, those with great alterations (large white kidneys), those with medium and those with slight alterations. Transitional forms were seen, so that no sharp distinction could be drawn between these groups.

As regards the histological picture, the most distinctive features were the well-marked amyloid deposits in the glomeruli, vasa afferentia and the vasa recta in the medullary substance. A. suggests that these are merely preliminary stages, so-called praeamyloid or achroamyloid substances. Besides these changes, the kidneys showed more or less conspicuous parenchymatous alterations.

In the two other groups the alterations were less prominent, and those belonging to the group showing only slight alterations were described by A. as non-complicated cases of amyloid kidneys.

In one case, that of a cow, he claims to have succeeded in producing general amyloidosis experimentally, by repeated injections of fowl albumin.

—GUSTAV NAERLAND (OSLO).

VIDESOTT, R. (1936). Il diabete renale in medicina veterinaria. [**Renal Diabetes in Domestic Animals**].—*Clin. vet., Milano.* **59.** 16-37. [Numerous refs.]

V. records a typical case of renal diabetes in a dog and discusses the syndrome of this condition, pointing out how it differs from pancreatic diabetes.

The tendency to develop renal diabetes appears to be inherited and the main clinical symptoms may be summarized as follows. The animal loses weight and becomes thin and dejected, in spite of the fact that its appetite remains normal and there is no evidence of parasitism. There is a persistent glycosuria but, if the animal be fasted for a few days, sugar disappears from the urine. It quickly returns when the dog resumes feeding and its appearance cannot be controlled by injections of insulin or by feeding a carbohydrate-free diet. However, the amount of sugar excreted never rises to an extreme value. In renal diabetes, the amount of sugar in the blood remains at a normal level which is maintained even after the administration of glucose by the mouth. It seems, therefore, that it is the renal threshold value for sugar which has become upset.—J. A. NICHOLSON.

GRIM, J. (1935). Příspěvek ke studiu bronchopneumonických změn u vepřů. [**Broncho-Pneumonia in Swine**].—*Zvěrolék. Rozpravy.* **9.** 233-240, 241-252, 253-257 and 265-268. 3 figs. [12 refs.]

Broncho-pneumonia is always present in swine influenza. The chief histological finding is lymphocytic infiltration of the bronchial epithelium. In acute cases the epithelium is completely destroyed. In the initial stage of the disease the bronchi and bronchioles are full of mucus; later they are filled up with cellular elements. The peribronchial and interstitial tissue is swollen, either by serous or cellular infiltration. The alveolar structure shows changes of various grades. The walls of alveoli are thickened and the alveoli are full of mucus or cellular elements.—E. PŘIBYL (BRNO).

KLOBOUK, A. (1935). K problému osutiny selat. [**"Rust" or "Soot" in Pigs**].—*Zvěrolék. Rozpravy.* **9.** 257-260. 1 fig.

The author gives a brief summary of the results of his experimental work on "rust" in pigs. It is a specific infectious disease and can easily be transmitted artificially. Recovered animals acquire immunity. The causal organism is probably a filtrable virus. The author was successful in transmitting the infection by inoculation with a filtrate prepared from an emulsion of the skin of affected animals.

The experiments indicate a correct method of specific prophylaxis and active immunization. In the author's opinion, the disease should be called exanthema suis exfolians sive exfoliativa.—E. Přibyl (Brno).

Petersen, W. W. (1936). Fortsatte undersøgelser over svinets kongenitale navlecyster. [**Congenital Umbilical Cysts in Swine**].—*Maanedsskr. Dyrlaeg.* **48.** 81-90. 3 figs. [1 ref.]

Umbilical cysts were found in 300 out of 300,000 swine examined. A single cyst or conglomeration of cysts was sometimes met with in the region inside or outside the umbilical ring. Occasionally development of cysts was combined with an umbilical hernia. In such cases the cyst or complex of cysts was situated partly in the abdominal cavity and partly on the surface. It is thought that the cysts developed from the umbilical duct.—H. C. Bendixen (Copenhagen).

Gisatullin, H. G. (1936). Zur Frage einer " sterilen Encephalitis " bei Laboratoriumstieren. [**" Sterile Encephalitis " in Laboratory Animals**].—*Dtsch. tierärztl. Wschr.* **44.** 244-247. 3 tables.

Ten rabbits and six cats were inoculated subdurally or intracerebrally with a suspension in physiological saline of fresh brain tissue from a cat or rabbit. In no case did an encephalitis develop. In two cases the inoculum contained staphylococci.

A second series of nine rabbits was inoculated intracerebrally with rabbit's brain which had been autolysed for varying periods at room temperature or at 37°C. by suspension in cerebrospinal fluid, horse or rabbit serum, or in physiological saline. Autolysis was most rapid in cerebrospinal fluid. In a few cases the suspension contained staphylococci. There resulted an encephalitis, fatal in from 14 to 18 hours, and more or less proportional to the degree of autolysis and to the dose of inoculum.

G. points out the importance of these findings in connexion with the experimental inoculation of animals with brain tissue for the diagnosis of virus diseases, *e.g.*, Borna disease. Fresh brain tissue should always be used.—E. G. White.

Bendinger, G. (1936). Zur Pathologie der Ferkelencephalitiden. [**Encephalitis of Piglets**].—*Arch. wiss. prakt. Tierheilk.* **70.** 426-438. [1 ref.]

The author presents evidence that there exists in the U.S.S.R. a nervous disease of pigs, which is not related to any disease previously described.

It usually occurs in pigs aged from one to four months, but occasionally in adult animals. It is commonest in autumn and winter. The onset is sudden, and several animals are usually affected. The characteristic symptoms are :– disturbed locomotion, often with turning of the head to one side ; movement in circles, and epileptic fits. The course of the disease is usually acute and fatal ; some cases, however, become chronic.

No macroscopic changes are present in the central nervous system but, histologically, there is meningo-encephalomyelitis, mainly restricted to the grey matter. The changes are similar to those found in swine fever, from which they differ only in distribution.

It is suggested that the disease is due to a filtrable virus of neurotropic nature, although no experimental evidence is offered in support of this view.—E. G. White.

1. Innes, J. R. M. (1936). **The Pathology of " Swayback " A Congenital Demyelinating Disease of Lambs with Affinities to Schilder's Encephalitis.**

—*Rep. Inst. Anim. Path. Univ. Camb. 1934-1935.* pp. 227-250. 24 figs. on 8 plates, 1 table, 1 appendix. [Numerous refs.]

II. INNES, J. R. M. (1936). **"Sway-Back" – A Demyelinating Disease of Lambs with Affinities to Schilder's Encephalitis in Man.**—*Vet. Rec.* **48.** 1539-1549. 10 figs. [Numerous refs.]

I. A fuller account of work reported elsewhere [*V. B.* **6.** 607]. "Sway-back" is a disease of the nervous system of a type which, although recognized in human pathology, has not hitherto been described in domestic animals. It affects new-born and young lambs in many parts of England and Wales, and a condition which is in all probability identical has been described by workers in Peru, Sweden, Australia and Canada.

In all cases examined a complete macroscopic and microscopic study of the central nervous system was made, in some cases supplemented by bacteriological, chemical and haematological studies.

Affected animals show spastic paralysis, particularly of the hind limbs, incoordination of movement, in some cases blindness, a progressive course unassociated with fever, and a generally fatal termination, not infrequently caused by an intercurrent infection.

The characteristic lesions are found in the central nervous system and constitute a diffuse symmetrical degeneration of the cerebral white matter. They vary from small foci to complete demyelination of both hemispheres. There is always secondary degeneration of the motor tracts in the spinal cord.

It is considered that neither bacteria, filtrable viruses, breeding, nor deficiency factors are the cause of the condition.

It is suggested that the causal agent is a toxic factor carried by the ewe during pregnancy, and perhaps for a short time after parturition. This hypothetical agent causes no recognizable pathological changes in the ewe but passes through the placenta and exerts a specific effect on the cerebral myelin, which it destroys or of which it inhibits the formation. The possibility that the toxic substance is a heavy metal is discussed, but it is found difficult to reconcile this view with the conditions under which the disease occurs in this country.

II. The substance of this article is covered by the former ones.—E. G. WHITE.

JABOTINSKY, J. M. (1936). Spontane Lähmungen der Hinterextremitäten bei Kaninchen. [**Spontaneous Paralysis of the Hind Quarters of Rabbits**].—*Z. InfektKr. Haustiere.* **49.** 105-122. 4 figs. [Numerous refs.]

The histological findings in the tissues of three rabbits are recorded. These animals showed paralysis of the hind quarters, for which no satisfactory explanation could be offered. Lesions consisted of multiple necrotic foci scattered throughout the grey and white matter of the lumbar section of the spinal cord. Similar changes were seen in the spinal ganglia. Typical foci showed a central homogenous mass littered with nuclear debris and, towards the margin, leucocytes could be seen as well as degenerating nerve cells. Nerve cells showed homogenization of the protoplasm and hyperchromatosis. Quite frequently karyorrhexis was present. In addition to this type of degeneration, the formation of shadow cells was noted. The outer zone showed leucocytic infiltration and accumulation of erythrocytes. These changes are discussed and compared with the lesions associated with other known types of paralysis. The aetiology is considered, but no conclusions are reached in this connexion.—E. J. PULLINGER.

I. HEPDING, L. (1936). Beiträge zur Aetiologie und Diagnostik der ansteckenden Hühnerlähmung. [**Cause and Diagnosis of Fowl Paralysis**].—*Inaug.*

Diss., Giessen. pp. 57. 3 figs., 6 tables. [Numerous refs.] [Also appeared in *Z. InfektKr. Haustiere.* **49.** 292-308].

II. BAUMANN, R. (1936). Untersuchungen über Aetiologie und Vorkommen der Hühnerlähme in Oesterreich. [**Fowl Paralysis in Austria**].—*Wien. tierärztl. Mschr.* **23.** 487-489.

III. FRITZSCHE, K. (1936). Praktische Erfahrungen in der Bekämpfung der Geflügellähme. [**Control of Fowl Paralysis**].—*Dtsch. tierärztl. Wschr.* **44.** 535-536.

IV. SEIFRIED, O. (1936). Geflügellähme und Nährschädenkrankheiten. [**Fowl Paralysis and Nutritional Diseases**].—*Ibid.* 520-522.

V. DOBBERSTEIN, J. (1936). Ueber das Wesen der Marekschen Geflügellähme (Neurolymphomatosis gallinarum). [**The Nature of Fowl Paralysis**].—*Ibid.* 522-523. [13 refs.]

I. Tissue emulsion from birds suffering from fowl paralysis was injected intraperitoneally and intracerebrally into one-day-old, four-week-old, and six-week-old chicks. Twelve out of 23 chicks (day-old) were thought to have become affected with fowl paralysis as a result of the inoculation, and out of the ten older birds four became affected. *Post-mortem* examinations were carried out after 15 to 40 weeks, symptoms having appeared 10 to 33 weeks after the inoculations. Lameness and eye symptoms were considered significant, but the diagnosis was always confirmed by examination for histological changes, particularly in the peripheral nerves, spinal cord and ganglia, brain and eyes. Birds used for inoculation were drawn from a flock in which there had been no cases of fowl paralysis during the previous year, and only four cases occurred during the current year. These experiments are considered as satisfactory evidence that fowl paralysis is an infectious disease. [Many of the inoculated chicks which did not develop symptoms of fowl paralysis died when less than six months old from parasitic or other conditions. Much of the value of the whole investigation was lost on this account].

II. It is concluded that the affection can be transmitted experimentally to chicks from three to six weeks old, by intradural or intramuscular inoculation. Older birds are more resistant. The inoculum used in these experiments was a Berkefeld filtrate of emulsified tissue. The incubation period varied from 5 to 16 weeks.

III. F. considers that only birds from flocks known to be free from fowl paralysis should be introduced into clean flocks and that all affected birds should be destroyed in areas where the condition is known to be in existence. He speaks of attention to the hygienic conditions.

IV. Paralysis in birds may be due to conditions other than the entity known as fowl paralysis. S. discusses such conditions.

V. A brief discussion, drawing attention to the resemblances between fowl paralysis and the transmissible tumours and leucosis of birds. Similarities include the primary proliferations of the connective tissue of nerves, and the absence of evidence of true neuritis or encephalomyelitis.—E. J. PULLINGER.

I. VENKATARAMAN, R. (1936). **A Note on Osteitis Deformans in Two Fowls.** —*Indian J. vet. Sci.* **6.** 108-111. 6 figs. on 2 plates. [2 refs.]

II. HAMMOND, J. C. (1936). **Inorganic Phosphorus and Perosis.**—*Poult. Sci.* **15.** 260-263. 2 tables. [10 refs.]

III. WILCKE, H. L. (1936). **The Influence of Single Grains on Slipped Tendons.** —*Ibid.* 264-269. 2 figs., 3 tables. [6 refs.]

I. During life the fowls, a cock and a hen, showed a diffuse thickening of the long bones, and a skiagram of the limbs revealed a condition of sclerosis. At

post-mortem examination the birds presented an anaemic and emaciated appearance. A longitudinal section of one of the bones showed the presence, in the medullary canal, of dense compact tissue resembling ivory. No cause was found for the condition.

II. A study was made to determine whether the inorganic portion of the total P of the diet is the primary cause of perosis in chickens. The groups of chickens used for the experiment were raised under the same system of management and fed on a variety of diets varying in Ca, total P, inorganic P and organic P content. They were examined for signs of perosis when eight weeks old. A statistical analysis of the results revealed that the highest correlation was between inorganic P and perosis. The experiments also showed that there is a factor in rice bran which influences the regulation of Ca and P metabolism in the chicken, and assists the normal development of bone.

III. A ration consisting of 72 parts of ground whole oats, plus a basal mixture composed of dried skim milk, oyster shell, bone meal and cod liver oil was found to be entirely satisfactory for young growing chickens. Stock fed on the same basal mixture plus ground wheat developed symptoms of a nutritional deficiency, the most marked effect being the deposition of urates in the ureters and kidneys. A few cases of slipped tendon occurred in a group of chickens fed on 72 parts of ground yellow corn plus the basal mixture. The tendency of this diet to produce slipped tendons was not corrected by the addition of corn bran or yeast. It was, however, found to be satisfactory if supplemented by ground oats or rice bran. The beneficial effect of these supplements could not be attributed to the increased fibre content or to the increase in the vitamin B complex of the ration.

—F. Blakemore.

Avelange. (1936). Anémie bovine régionale dans les Vosges. [**Anaemia of Cattle in the Vosges, France**].—*Bull. Acad. vét. Fr.* **9.** 260-261.

On the more elevated regions of the Vosges there occurs in pregnant cows a disease characterized by anaemia and atony, which become progressively marked as pregnancy advances. The natural herbage in the region is of very poor quality and the condition is regarded as due to a dietary deficiency.—J. R. Greig.

I. Stewart, J. (1936). **The Effects of Phosphorus Deficient Diets on the Metabolism, Blood and Bones of Sheep with Special Reference to Conditions Existing in Great Britain.**—*Rep. Inst. Anim. Path. Univ. Camb. 1934-1935.* pp. 179-205. 3 figs., 4 tables. [15 refs.]

II. Innes, J. R. M. (1936). **The Anatomical Changes in the Bones and their Relationship to Rickets.**—*Ibid.* 206-211. 3 figs., 2 plates. [9 refs.]

I. The organic constituents of food containing sufficient starch equivalent, digestible protein and minerals other than P were digested by sheep to a normal extent; however, failure to gain in weight as compared with controls receiving a P supplement suggested that P deficiency is a limiting factor in food utilization and live weight increase. Blood analysis showed that the inorganic P fell and the Ca rose after 5 months on this diet, and that there is a reciprocal relationship between the Ca and inorganic P contents of the blood. Chemical examination of the skeletal structures of sheep after 18 months on this deficient diet showed that the ash content had fallen considerably in all cases. Chemical examination of the blood and of the bones of sheep kept on P-deficient areas, such as the hill farms of Yorkshire and Northumberland, reveals this deficiency. Endogenous losses are prevented by additions of P to the diet.

II. Macroscopic examinations were made of representative bones of the control and experimental sheep used during the above investigation and they were compared with those of sheep suffering from such natural skeletal diseases as "cappi" and "cripples". The long bones of the P-deficient sheep showed a thinning of the compact substance without any gross porosity, expansion of the medullary cavity and a marked reduction in the cancellous tissue (spongy substance). The bone structure was thus delicate without being really osteoporotic, and somewhat resembled that of animals on a low Ca diet and of those suffering from "cappi". With the loss of P there was incapacity to form further bone, and the decrease in the spongy substance indicated a resorption of the bone reservoirs.

Since rickets can be produced by feeding P-deficient diets and since by suitable alteration of the vitamin D and mineral contents of the diet symptoms of osteitis fibrosa, generalized osteoporosis and rickets can be produced almost at will, Innes suggests that these different types of bone lesions are all manifestations of rachitic disease in the widest sense of the term.—ALFRED EDEN.

MITCHELL, H. H. (1936). **Phosphorus Deficiencies and Disease.**—*Vet. Med.* **31.** 66-71. 1 photograph. [9 refs.]

The importance of phosphorus in the animal economy is discussed. The most typical aphosphorosis is considered to be rickets.

The relationship of vitamin D and ultra-violet radiation to this type of aphosphorosis is discussed, mention being made of variation in the reactions of different species, and of the occurrence of botulism following depraved appetite when access is obtained to putrefied carcass material. Sheep and horses are less susceptible to the effects of phosphorus-deficient pasturage [see *V. B.* 2. 168].

The occurrence of a mild type of aphosphorosis in Illinois is described and enlarged upon in the ensuing discussion.—F. H. MANLEY.

MURPHY, Elizabeth F. (1936). **An Experimental Study of the Relation between the Uropygial Gland and Vitamin D Deficiency in Chicks.**—*J. agric. Res.* **53.** 67-71. 1 fig., 1 table. [13 refs.]

Controlled groups of normal chicks and of chicks whose uropygial glands had been removed were fed on a rachitogenic diet and exposed to ultra-violet radiation or given various vitamin D supplements. After removal of the gland rachitic birds improved following daily irradiation. The utilization of ultra-violet radiation in the production of vitamin D is not adversely affected by removal of the gland.—ALFRED EDEN.

PETERS, R. A. (1936). **The Biochemical Lesion in Vitamin B_1 Deficiency.**—*Lancet.* **230.** 1161-1165. 2 figs. [Numerous refs.]

In studies of the oxygen uptake of the brain of the pigeon under conditions of avitaminosis B_1, it was found that addition of vitamin B_1 to the brain increases the oxygen uptake to the normal level. The lowered oxygen uptake of the brain in glucose, lactate or pyruvate media is due to a deficiency of vitamin B_1 from the tissue, but with a succinate substrate there is no difference from the normal. Evidence is adduced that B_1 is a catalyst affecting the combustion of carbohydrate in the body. Avitaminosis-B pigeon brain produces pyruvate *in vitro*, and addition of B_1 causes the pyruvate to disappear. Pyruvic acid is present in the blood of beri-beri patients and disappears on dosage with the vitamin.—ALFRED EDEN.

PUBLIC HEALTH.

HUDDLESON, I. F. (1936). **Procedures for the Detection of Brucella in Milk.**—*Amer. publ. Hlth Ass. Yearb. 1935-1936.* pp. 118-122. [13 refs.] Suppl. to *Amer. J. publ. Hlth.* **26.**

H. deals with the technique for testing milk by the rapid agglutination test, and the differentiation of brucella by growth on a dye medium.—H. H. HOLMAN.

BRYAN, C. S., & MEYER, D. B. (1936). **The Effect of *Brucella abortus* Infection of the Udder on the Quality of Milk.**—*J. Amer. vet. med. Ass.* **89.** 199-206. 2 tables. [8 refs.]

Milk from 27 cows, which were free from streptococcal mastitis, but continually excreting *Br. abortus*, was submitted over a period of from six to nine months to the methylene blue reduction test, bacterial counts, leucocyte counts, tests for chlorides and for pH.

B. and M. compared the results with those considered to be normal for healthy cows, and concluded that a low-grade mastitis was present. The changes were, however, less pronounced than in streptococcal mastitis. Records for individual cows are not given.—H. H. HOLMAN.

THERAPEUTICS AND MATERIA MEDICA.

LAJOS, M. (1936). Sperimenti con ormone preipofisario. [**Treatment of Impotence with Anterior Pituitary Hormone**].—*Clin. vet., Milano.* **59.** 189-196. [14 refs.]

Lack of desire for sexual intercourse is not infrequently observed in stallions although no abnormality is to be found in their genital organs. In some cases, spermatozoa are absent from the semen; in others, the spermatozoa are few in number or deformed.

L. treated such cases with injections of anterior pituitary, but without much success. He considers, however, that further trials should be made.—J. A. N.

POISONS AND POISONING.

MCCRORY, B. R., & WARD, J. C. (1936). **The Toxicity of Thallium Sulphate for Cattle.**—*J. Amer. vet. med. Ass.* **89.** 301-312. 6 figs., 1 table. [Num. refs.]

Four cows were used for this investigation. After starvation for 24 hours they were offered oats rendered poisonous by addition of thallium sulphate. If the food was not finished quickly, the remainder was administered with a balling gun. Doses were given, ranging from 15 to 50 mg. per kg. body weight. It is concluded from the experiments that the lethal dose for cattle is approximately 25 mg. per kg. body weight. The animals died in from four to 13 days after being dosed. Typical symptoms observed in the poisoned animals were inappetence, salivation, mucopurulent discharge from the nose, gastro-intestinal paresis, frequent micturition and incoordination of the hind quarters. The most striking lesion at *post-mortem* examination was a pronounced gastro-enteritis.—G. D. SHEARER.

I. FRANKE, K. W., & PAINTER, E. P. (1936). **Selenium in Proteins from Toxic Foodstuffs. I. Remarks on the Occurrence and Nature of the Selenium Present in a Number of Foodstuffs or their Derived Products.**—*Cereal Chem.* **13.** 67-70. [11 refs.]

II. Painter, E. P., & Franke, K. W. (1936). **Selenium in Proteins from Toxic Foodstuffs. II. The Effect of Acid Hydrolysis.**—*Ibid.* 172-178. [Numerous refs.]

III. Painter, E. P., & Franke, K. W. (1935). **Selenium in Proteins from Toxic Foodstuffs. III. The Removal of Selenium from Toxic Protein Hydrolysates.**—*J. biol. Chem.* **111.** 643-651. [Numerous refs.]

IV. Franke, K. W., & Painter, E. P. (1935). **Selenium in Proteins from Toxic Foodstuffs. IV. The Effect of Feeding Toxic Proteins, Toxic Protein Hydrolysates, and Toxic Protein Hydrolysates from which the Selenium has been removed.**—*J. Nutrit.* **10.** 599-611. 1 table, 2 charts. [16 refs.]

V. Franke, K. W., Moxon, A. L., Poley, W. E., & Tully, W. C. (1936). **Monstrosities Produced by the Injection of Selenium Salts into Hens' Eggs.** —*Anat. Rec.* **65.** 15-22. 2 figs., 1 table. [10 refs.]

VI. Schoening, H. W. (1936). **Production of So-Called Alkali Disease in Hogs by Feeding Corn Grown in Affected Area.**—*N. Amer. Vet.* **17.** No. 9. 22-28. [6 refs.]

I. F. and P. describe a test whereby Se can be detected in grain, using only from 1 to 5 g. of the sample. This is a qualitative test in which codeine sulphate develops a blue colour in the presence of Se. Vanadium also gives a blue colour. No sample of grain known to be toxic to laboratory animals has failed to respond to the test. It was found that the Se was present in the gluten from wheat and that it could not be removed from the protein by the common solvents for Se, indicating that it was present in the organic form. Even after hydrolysis with acid of Se-containing protein, the Se was still present in the organic form.

II. When toxic proteins were hydrolysed with hydrochloric and sulphuric acids, the Se was distributed partly in the insoluble humin and partly in the soluble hydrolysate. When hydriodic acid was used for hydrolysis, the hydrolysate was found to be free from Se. It was found that tryptophane and tyrosine isolated from the products of hydrolysis contained no Se. The possibility of the Se replacing sulphur in sulphur-containing amino-acids is discussed.

III. Se-containing proteins from toxic grains were hydrolysed by sulphuric acid and attempts were made to remove the Se from the soluble hydrolysate with various reagents. It was found that a saturated solution of $HgCl_2$ completely precipitated the Se. No other reagent was equally effective. Extraction of a neutral hydrolysate with butyl alcohol removed most of the Se.

IV. The protein from toxic wheat, the product obtained on the hydrolysis of this protein by sulphuric acid, and the residue remaining on removing the Se from the products of hydrolysis of the toxic protein by $HgCl_2$, were fed to groups of rats and weight curves were drawn. It was found that, when the hydrolysate of the toxic protein was precipitated with $HgCl_2$, it no longer possessed any growth-inhibiting properties for rats. This growth-inhibiting substance is probably Se.

V. Monstrosities, similar to those occurring naturally, were produced by injecting Se in the form of sodium selenite or sodium selenate into the air cell of hens' eggs before incubation. Injection of salts of arsenic, lead and fluorine produced ectopic conditions, but no monstrosities as were produced by Se.

VI. Two samples of corn, one containing 10 parts and the other 5 parts per million of Se, were fed to two groups of pigs with five pigs in each group. A control group of five pigs was fed corn obtained from an area where there was no history of the disease. The group receiving the second sample showed no signs of ill health and feeding was discontinued after the experiments had run for 35 and 74 days respectively. Two pigs of the group being fed with the first sample

showed distinct signs of the disease after 111 days; they were then killed and a *post-mortem* examination was carried out. The other pigs in the group were taken off experiment after 35 days. The symptoms observed were loss of hair from the back and an extensive growth of horn on the hoof. No very definite lesions were observed on *post-mortem* examination. The pigs on the control diet remained normal throughout the experiment.—G. D. SHEARER.

I. BRAID, K. W. (1936). **Poisonous Plants with Special Reference to the Poisonous Properties of Bracken** (*Pteridium aquilinum*).—*Scot. J. Agric.* **19.** 247-251. [8 refs.]

II. ROGERS, C. F., & BOYD, W. L. (1936). **Sudan Grass and Other Cyanophoric Plants as Animal Intoxicants.**—*J. Amer. vet. med. Ass.* **88.** 489-499. 3 tables.

III. SANDERS, D. A., SHEALY, A. L., & EMMEL, M. W. (1936). **The Pathology of Crotalaria spectabilis Roth Poisoning in Cattle.**—*Ibid.* **89.** 150-156. [7 refs.]

IV. BOUGHTON, I. B., & HARDY, W. T. (1936). **Oak Poisoning in Range Cattle and Sheep.**—*Ibid.* 157-162. [4 refs.]

V. CAZABAN, F., & ISNARD, J. (1936). Contribution à l'étude des torteaux de lin cyanogénétiques. [**Cyanogenetic Glucoside Content of Linseed Cake**].—*Rec. Méd. vét.* **112.** 214-221. [17 refs.]

I. This is a summary from published works on the poisonous effects of water dropwort (*Oenanthe crocata*) and bracken (*Pteridium aquilinum*) on farm animals.

II. Sudden death in animals after feeding on Sudan grass or sorghum is not always due to the presence of cyanide in the food. The authors fed cows and sheep for long periods on Sudan grass and sorghum, capable of generating HCN, without producing any harmful effects. Sudden death following the ingestion of food capable of generating even minute amounts of HCN is too frequently ascribed without further investigation to poisoning by cyanide. This is a very timely discussion on the effects of the ingestion of cyanogenetic plants.

[A similar belief exists in Great Britain with regard to the feeding of linseed cake. Sudden death following the ingestion of linseed cake, even though the cake is subsequently shown to be capable of generating only minute amounts of HCN, is at once ascribed to cyanide poisoning without other causes of death being considered].

III. Cattle which had been grazing on crotalaria for two weeks developed symptoms, after a latent period varying from two to six months, including impaired appetite, diarrhoea, ascites, acute bloating, decubitus and tenesmus with partial eversion of the rectum.

These symptoms were reproduced in cattle by feeding the seed as a drench over periods of from 30 to 60 days, after which they were killed and a *post-mortem* examination performed. This revealed hydroperitoneum, a firm indurated liver, enlarged gall-bladder, icterus, congestion of the kidneys, congestion, oedema and emphysema of the lungs and hypertrophy of the cardiac muscle. On microscopic examination, there were observed a diffuse intra- and interlobular fibrosis, atrophic degeneration and pigmentation of the hepatic parenchyma, fibrosis of the spleen, and parenchymatous degeneration and fragmentation of the renal epithelium. These *post-mortem* findings agreed closely with those found in the natural cases, although in the latter the lesions were of a more chronic character.

IV. The authors describe outbreaks of poisoning in cattle and sheep produced by the common shine oak (*Quercus breviloba*). The mortality of affected animals was about 85% in cattle and from 90 to 95% in sheep.

The symptoms, which were essentially the same in cattle and in sheep, were listlessness, complete inappetence accompanied by cessation of rumination, a brownish nasal discharge, sunken eyes, rough coat, and obstinate constipation. *Post-mortem* examination revealed the presence of large amounts of fluid in the body cavities, pale kidneys, friable liver and a distended gall-bladder containing a brownish coloured bile. The abomasum usually showed a severe haemorrhagic gastro-enteritis extending to the small intestine. No satisfactory treatment has been evolved.

V. C. and I. claim to have shown that HCN is liberated, by boiling finely ground linseed cake known to contain a large amount of the cyanogenetic glucoside, linamarin, with water, although the enzyme linase present in the linseed cake will have been destroyed. They therefore assume that, besides the enzyme linase, something is present in linseed cake which is capable of liberating the HCN from the glucoside.—G. D. Shearer.

Rose, A. L. (1936). **A Note on the Toxicity of Nicotine Sulphate for Lambs.**—*Aust. vet. J.* **12.** 64-65.

A mortality of 8·4% occurred in five to six-month-old lambs, due to dosing with a mixture of copper sulphate and nicotine sulphate. The quantity given was approximately twice the recommended dose. Prolonged starvation previously (24 hours) possibly increased the susceptibility to poisoning. The symptoms included incoordination of movement, muscular tremors and extreme prostration. Tympanites was observed in lambs which survived for more than a few hours. *Post-mortem* examination showed intense haemorrhagic congestion of the abomasum and of the first 25 feet of the small intestine, accompanied by sub-mucous oedema. In a few cases the lungs were oedematous and there was an excess of pleural effusion.

A few lambs were given half a pint of milk each; these improved and no further deaths occurred among them.—H. McL. Gordon.

PHYSIOLOGY.

I. Schramm, W. (1935). Untersuchungen über das neutrophile Blutbild beim Pferd und Rind. [**The Neutrophile Blood Picture of Horses and Cattle**].—*Inaug. Diss., Hanover.* pp. 156. Numerous tables. [Num. refs.]

II. Dell, A. (1935). Gerinnungszeit des Blutes des normalen Tieres, sowie deren Beeinflussung durch die Nahrungsaufnahme und durch die einzelnen Tageszeiten. (Untersuchungen an Ziege, Schwein, Hund, Kaninchen, Schaf). [**Coagulation Time of Blood of Goats, Swine, Sheep, Dogs and Rabbits**].—*Inaug. Diss., Hanover.* pp. 35. 11 tables. [Numerous refs.]

III. Kennedy, W. P., & Mackay, I. (1936). **The Normal Leucocyte Picture in a Hot Climate.**—*J. Physiol.* **87.** 336-344. 3 figs., 3 tables. [13 refs.]

IV. Urbain, A., Cahen, R., Pasquier, M. A., & Nouvel, J. (1936). Sur le nombre d'hématies de quelques ongulés. [**The Number of Red Blood Corpuscles in Certain Ungulates**].—*C. R. Soc. Biol. Paris.* **122.** 1208-1210.

V. Wallgren, I. (1936). Gibt es im Blut einen Faktor der die Amöboiden bewegungen der Neutrophilen Granulozyten befördert? [**The Presence in the Blood of a Factor which Promotes Amoeboid Movement of the Neutrophilic Granulocytes**].—*Acta path. microbiol. scand.* Suppl. 26. pp. 210-211. [In German].

I. Differential blood cell counts showed that, in cattle, the neutrophiles

varied between 13 and 56% of the total leucocytes, whereas, in horses, from 56 to 68% appeared to be the normal figure. Variations in the position and shape of the nucleus were often observed and S. was able to classify these into three main groups, rod-shaped, transitional and segmented. Blood films from horses suffering from a variety of diseases were also examined. It is suggested that a differential count is of great value for arriving at a prognosis, but is not of much value for diagnosis.

II. The coagulation time of blood from normal rabbits, pigs, dogs, goats and sheep has been determined by Fonio's method and by the microscopic method of Fuchs. There was a great discrepancy in the results obtained by the two methods; for example, the average coagulation time for sheep's blood by Fonio's method was 26 min. 37 sec. and by Fuchs' method 8 min. 53 sec. However, both methods showed that the coagulation time was shortest in the morning prior to feeding and longest about an hour and a half after feeding. The coagulation time was also affected if the animal struggled, while blood was being taken.

III. It has been found that the blood picture of normal Europeans in Iraq differs considerably from the standards given in text-books of tropical medicine. Differential blood counts showed that the polynuclear count deviated to the left, the neutrophiles were relatively reduced and the monocytes were increased. These findings are suggestive of bone-marrow stimulation and, since ultra-violet radiation is recognized as a potent haemapoietic stimulus, it is thought that the hot, dry climate of this region is responsible for producing the effects observed. The interest of this paper lies in the relation of climate to the haemopoietic system.

IV. The authors studied the number of red blood corpuscles in certain varieties of wild sheep, deer and camels belonging to a zoological garden. The figures obtained for wild sheep varied considerably; in one variety 29 million per c.mm. of blood were recorded. The authors consider, however, that the number of corpuscles in the same sex and species of animal is fairly constant.

V. It has been found that, when a drop of blood is mixed with serum from the same individual, the neutrophilic granulocytes show marked amoeboid movement. This effect is not produced by serum which has been kept in cold storage.

—J. A. Nicholson.

Behrend, C. (1935). Untersuchungen über das Gewicht, die Grösse und den Inhalt des Psalters von Schlachtkühen. [**Weight, Size and Contents of the Omasum of Cows**].—*Inaug. Diss., Hanover.* pp. 48. 3 tables. [17 refs.]

The weight of the omasum, with its food content, of 50 healthy cattle varied between 4 and 20 kg., and that of 130 cattle suffering from various diseases between 3 and 27 kg. The dimensions varied extremely, also the nature of the contents. It is impossible to give useful average figures.—J. E.

Pedersen-Bjergaard, K., & Glud, P. (1936). Kvantitative hormonundersøgelser af serum og urin fra draegtige hopper. [**Examination for Hormone of Serum and Urine from Pregnant Mares**].—*Maanedsskr. Dyrlaeg.* **48.** 33-44. 16 figs. [7 refs.]

The presence of the gonadotropic hormone in the blood of 42 pregnant mares and of oestrin in the urine of 34 pregnant mares was determined. The gonadotropic hormone is present in large amounts from about the 45th to about the 96th days of pregnancy. There are, however, great individual variations, so that average figures can only be obtained by examining a large number of animals. The amount of oestrin was found to decrease greatly during the last two months of pregnancy.—H. C. Bendixen (Copenhagen).

I. Koch, W. (1936). Beseitigung unerwünschter Brunsterscheinungen bei Katzen und Hunden durch hormonale Sterilisierung. [**Hormonal Prevention of Undesired Oestrus in Dogs and Cats**].—*Tierärztl. Rdschr.* **42.** 634-635. [6 refs.]

II. Scheibe, H. (1936). Ueber den Nachweis der Sexualhormone nach der Küstschen Methode im Fruchtwasser des Rindes. [**Demonstration of Sex Hormones in the Placental Fluid of Cattle by Küst's Method**]. *Ibid.* 557-560. 6 tables. [8 refs.]

III. Anon. (1936). **Units of Sex Hormones.**—*Lancet.* **231.** 595-596.

IV. Steffens, M. (1936). Hormonale Brunstauslösung und Steigerung der Fruchtbarkeit bei Schafen. [**Hormonal Induction of Oestrus in Sheep**]. *Berl. tierärztl. Wschr.* **52.** 517-521. 8 tables. [Numerous refs.]

V. Phillips, R. W., & Andrews, F. N. (1936). **The Development of the Testes and Scrotum of the Ram, Bull and Boar.** *Bull. Mass. agric. Exp. Sta.* No. 331. pp. 16. 28 figs., 9 tables.

I. K. found that three injections (subcut.) of 1 c.c. prolan containing 100 rat units, at intervals of four to five days, lead to the production of an abnormal number of corpora lutea in the ovary and therefore prevent the onset of oestrus in bitches and cats for about a year.

II. Using Küst's method for the recognition of sex hormones, the author examined allantoic and amniotic fluid from 53 foetuses differing in age and sex. A positive reaction was never obtained with amniotic fluid and was only obtained with allantoic fluid in 17% of the samples examined. It appears that a positive reaction can only be expected between the third and fifth months of gestation and that the sex of the foetus has no influence on the hormonal content of the allantoic fluid.

III. Three standard sex hormone preparations are now available, oestrone, oestradiol monobenzoate and androsterone. It seems likely, however, that progesterone will shortly be added to the list. The international standard preparations of these substances are crystalline materials, the activities of which differ little from ideally pure substances. They are standardized by weight and the only relation between international units and animal units is that they are of the same order of magnitude. The standardization of gonadotropic hormones on this system is still impossible, and at present the clinician can only choose, from experience, a preparation which can be relied upon for stability and uniformity of action.

IV. S. says that absence of oestrus in sheep may be due to ovarian dysfunction and that in such cases there is no clinical evidence of disease processes. He considers that this form of sterility is usually associated with poor feeding and maintenance conditions and states that he obtained good results by using prolan preparations. He gives some details of the results obtained.

V. It is now accepted that the temperature of the scrotum is maintained at a fairly constant level by the tunica dartos, and that a temperature considerably lower than that of the body cavity is necessary for the proper functioning and development of the testes. P. and A. tried to correlate these factors by studying the development of the testes and tunica dartos, and the effects of low nutrition on these structures.

Careful histological examinations showed that spermatozoa first appear in rams and boars about 147 days after birth, and in bulls about 224 days after birth. Low nutrition inhibits the development of the seminiferous tubules and tunica dartos. The sensitivity of the latter to temperature changes was studied by suspending some of the muscle in Ringer's solution and recording the contractions. In

rams and boars, the muscle first showed a marked reaction to temperature changes about 100 days after birth. The results in bulls were very variable. Evidence was obtained that the muscle is dependent on a testicular hormone for the development of its sensitivity to temperature changes, since a reaction to such changes could not be obtained after castration.—J. A. NICHOLSON.

DYBING, O. (1936). Orienterende undersøgelser over surhedsgraden i hoppens genitalkanal. [**The Vaginal Acidity of Mares**].—*Maanedsskr. Dyrlaeg.* **47.** 561-569. 1 fig., 6 tables. [8 refs.]

The Wulff-Folie colorimeter was used for pH-determination of the secretions from the genital organs of freshly slaughtered mares. The results are dealt with statistically. The average pH figures were :– in the vestibulum 7·9 ; in the vagina 7·4 ; in the cervical canal 6·9, and in the uterus 6·7. The uterus-secretion showed an average of 6·4 in the corpus luteum phase and 6·9 in the other phases of the uterine cycle. D. considers that the pH in the heat period is very near the optimum for the spermatozoa. Afterwards, when the corpus luteum begins to develop, it falls to about 6·2 to 6·3.—H. C. BENDIXEN (COPENHAGEN).

SANTONI, L. (1936). Di una singolare cutizzazione della faccia interna dell'amnios negli animali domestici. Incostanza del particolare aspetto, macro e microscopico, di tale foglietto amniotico nei vari periodi della gravidanza. [**Anatomy of the Amniotic Membrane in Domestic Animals**].—*Clin. vet., Milano.* **59.** 494-499. 2 figs. on 1 plate. [13 refs.]

Observations have shown that the internal surface of the amnion of cows is covered by numerous papillae which are present at the second month of gestation and cover the whole of the amnion by about the fourth month. They are irregularly arranged and are often collected into groups which are less numerous towards the extremity of the amniotic sac. They are whitish or yellowish in colour and vary in size and shape. Their histological structure resembles that of foetal skin. —J. A. NICHOLSON.

HANSMAN, F. S. (1936). **The Problem of Calcification.**—*Med. J. Aust.* May 9th. 631-643. 5 text figs., 10 figs. on 4 plates. [Numerous refs.]

The composition of the bone salts, the blood in its relation to the mechanism of calcification, the relation of vitamin D and the level of Ca and P in the diet to calcification, and the effect on calcification of the secretions of the endocrine glands are briefly discussed. Some remarks are made with regard to the Ca and P requirements for normal calcification in the human being and it is suggested that the problem of P requirements is a more important one than that of Ca requirements. —R. H. WATSON.

MYBURGH, S. J. (1935). **The Carotene Content of Some South African Feeds.**—*Onderstepoort J. vet. Sci.* **5.** 475-482. 1 table. [Numerous refs.]

Following the method of Guilbert for the analytical determination of carotene in plant materials, which proved suitable for wider application, some typical South African feeding stuffs were analysed. There is proof that South African pastures are low in carotene for a greater part of the year, due to prolonged periods of drought ; hence there is a suspicion of A-avitaminosis in animals under ranching conditions, where the pasture is the main and probably only source of carotene for vitamin A.

TECHNIQUE.

MESTRE, H. (1935). **A Precision Photometer for the Study of Suspensions of Bacteria and Other Microörganisms.**—*J. Bact.* **30.** 335-358. 2 figs., 1 table. [Numerous refs.]

The observation of the degree of turbidity as an indication of the numbers of bacteria present per unit volume is, wherever practicable, substituted for the laborious methods of direct or colony counting. Various objective methods have been devised. These belong to one or two distinct optical types, *viz*, those which measure the intensity of light scattered by the suspension under test (called by M., " tyndallmeters ") and those in which the transmission of a beam of light is measured (called by M., " densitometers "). Various instruments of both types are briefly described and the available theory relating to the scattering of light by suspensions of micro-organisms is discussed, with particular reference to the design of instruments and the interpretation of data.

Based on this and on previous experience, a photo-electric cell densitometer of relatively high precision has been constructed for the study of growth, stasis and lysis in suspensions of micro-organisms. The design and operation of this are described and its characteristics are discussed.—A. W. STABLEFORTH.

MISCELLANEOUS.

MASON, Ethelwyn, & WATERS, D. F. (1936). **An Iodine Survey of New Zealand Live-stock. Part III. Sheep of the Canterbury District.** *Trans. roy. Soc. N.Z.* **66.** 143-177. 4 figs., 19 tables. [6 refs.] [See also *V. B.* **4.** 490].

This work is a continuation of that already published for other New Zealand districts, the I_2 content of thyroids from sheep and lambs being used as a standard for I_2 assimilation.

No correlation exists between the I_2 content of glands and soil types. Canterbury is, on the whole, low in I_2.—C. S. M. HOPKIRK.

BULGARIA. (1935). **11th Yearbook of the Veterinary Medical Faculty, University of Sofia, 1934-1935.** pp. 571. Numerous figs. and tables. [Numerous refs.] Sofia: Imprimerie de la Cour. [In Bulgarian: French and German summaries].

This annual volume comprises 19 articles on veterinary subjects, all in Bulgarian with German or French summaries. These papers will be abstracted separately in this *Bulletin*.—J. E.

OFFICIAL AND OTHER REPORTS.

GREAT BRITAIN. (1936). **Report of the Annual Congress of the National Veterinary Medical Association, Great Britain, held at Scarborough, 1936.** pp. 72 + lxxxv. London: National Veterinary Medical Association. [8vo].

The annual report of the association is published in book form and is accompanied by the text of papers prepared for discussion at the congress. The papers were also published in the *Veterinary Record* and certain of them abstracted in this *Bulletin*.—J. E.

ITEMS OF VETERINARY INTEREST F

I. BOLTON. (COUNTY BOROUGH). (1936). **Annual Report of the Veterin Officer.** [HOLMES, R. P.]—*Rep. Med. Offr Hlth Bolton, 1935.* pp. 48 9 tables.

II. LIVERPOOL. (CITY). (1936). **Annual Report of the Chief Veterin Officer for 1935.** [PILLERS, A. W. N.] pp. 36. 10 tables. Liverpo C. Tinling & Co. Ltd. [8vo].

III. MANCHESTER. (CITY). (1936). [**Report on**] **Diseases of Animals, 19 1936.** [JOHNSTONE, W. K.]—*Rep. Markets Comm. Manchr, 1936.* pp. 21 1 table.

	A. MILK SUPPL						
	NUMBER OF HER						
	1	2	3	4	5	6	7
	Certified.	Grade A (T.T.).	Grade A (Accredited).	Ungraded.	Pasteurized.	Registered Herds/Shops.	Milch Cow
Bolton	2		5		2	687	2,7
Liverpool	1		45				3,3
Manchester	21D	41D	6P 21D		25D	59P 889D & P	1,5
Newcastle			7			23	5
Preston	2D	1D	2P 25D	200D	2P 1D	17P 74D	4
Salford	14D	3D	1P 9D		19D	767D	

NOTE. P = Producer in the Urban District : D = Dealer in towns supplied farms outside the towns.
A blank denotes " no information " ; a dash denotes " no cases observed

ADDITION

1. BOLTON.—Veterinary staff – one. A summary of quality tests for the grad milk is given : abattoir statistics are given.
2. LIVERPOOL.—Veterinary staff – three. Duties include supervision of Corporation's stud of 246 draught horses and other animals, and the mana ment of a farm. Statistics of examinations of cows within the city, 1930-19 are given. Livestock orders as of local interest are described.

3, & 4. MANCHESTER.—Veterinary staff – three in employ of Markets Dept., one the Public Health Dept. Tuberculous milk statistics for 1901-1935 are giv Livestock market trade statistics are given.

ICIPAL REPORTS, GREAT BRITAIN.

MANCHESTER. (CITY). (1936). **Report of Veterinary and Milk Control Section.** [LOCKE, R. C.]—*Rep. Hlth City Manchr, 1935.* pp. 58-65. 8 tables.

NEWCASTLE. (CITY AND COUNTY). (1936). **Annual Report of the Veterinary Officer for the Year 1935.** [PARKER, T. P.] pp. 31. 18 tables. Newcastle upon Tyne: R. Ward & Sons Ltd. [8vo].

PRESTON. (COUNTY BOROUGH). (1936). **Report of the Veterinary Officer.** [FINCH, R.]—*Rep. med. Offr Hlth Preston, 1935.* pp. 52-67. 8 tables.

SALFORD. (CITY). (1936). **Report Relating to the Veterinary Inspector's Department.** [ALEXANDER, A.]—*Rep. med. Offr Hlth Salford, 1935.* pp. 159-176. 5 tables.

			B. MEAT INSPECTION.		C. NOTIFIABLE DISEASES (Still prevalent).					
LYING MILK.										
8	9	10	11	12	13	14	15	16	17	18
Samples tested for tubercle bacilli.	No. Tuberculous.	No. Tuberculous udders.	Tuberculous bovines.	Tuberculous pigs.	Bovine tuberculosis (including item 10).	Anthrax.	F. & M. Disease.	Swine Fever.	Mange.	Sheep Scab.
58	5		1,139	678	22	–	–	1	–	
outside in city	64 outside 41 in city	37			66	1	–	4	2	–
1,738	175	6 in city 116 outside	1,043	162	8	–	–	3	2	–
10	3		159	704	6	2	–	–	2	–
358	28	4	65	28,800 lb.	20	–	–	–	1	–
472	48	6	50,735		6	–	–	8		

Column 6 = Approved milk producers and/or milk retailers supplying milk to the urban population.

Column 7. Refers only to cows within the urban district.

ES.

NEWCASTLE.—Veterinary staff – two. Statistics of diseased cows in the city for 1907-1935 are given. Newcastle Markets (Swine Fever) Order of 1922 is described; also the new Ministry of Agriculture Orders concerning livestock. Livestock market trade and abattoir statistics are given.

PRESTON.—Veterinary staff – one. Ministry of Agriculture Orders concerning livestock are briefly described.

SALFORD.—Veterinary staff – one. Tuberculous milk statistics for 1923-1935 are given.—J. E.

AUSTRALIA, NEW SOUTH WALES. (1936). **Live Stock Diseases Report (No. 11) Recording Control Work during the Year ended 30th June, 1935.** [HENRY, M.] pp. 25. 4 tables. Sydney: Alfred James Kent, Govt. Printer. [8vo].

During the year agreements were entered into between the states of N.S.W., Victoria and South Australia in order to achieve greater freedom of interstate traffic in livestock and animal products.

Statistics are given for the overseas quarantine and interstate traffic in livestock.

CONTAGIOUS BOVINE PLEURO-PNEUMONIA.—In connexion with the administrative control, emphasis is laid on the great value of the complement-fixation test and the opinion is expressed that, provided sufficient staff is available, there is no reason why complete eradication in the County of Cumberland should not be attempted.

ANTHRAX.—A serious outbreak was reported on the North Coast, affecting cattle and pigs, and one human being. The initial deaths in cattle appeared to be due to cows grazing over country on which some banana fertilizer, containing bone meal, had been spread. This could not be confirmed, however, as the source of the infection. The outbreak was checked by drastic quarantining of infected properties and the vaccination of all in-contact cattle. Thirty-seven other outbreaks occurred during the year, all of them being in recognized anthrax areas. The total number of animals vaccinated was 164,204 sheep and 3,813 cattle.

ACTINOMYCOSIS.—Condemnations comprised 569 animals.

TUBERCULOSIS.—Progress in control continues, there being an increase of 20% in the herds inspected compared with the previous year and 10% increase in the number of cattle. A third municipality has now been declared tuberculosis-free and voluntary testing of milk-supplying herds is being undertaken.

PIROPLASMOSIS, BLACK DISEASE and "CATTLE TICK" CONTROL.—In regard to "cattle ticks" (*Boophilus australis*), it is stated that, owing to the financial situation, no actual eradication work was undertaken though the routine control measures were continued. Details are given of the present position.

LICE AND KEDS.—The distribution of infestation of sheep showed some extension during the year and interesting details are given, the former being prevalent on the higher rainfall areas of the tablelands, the latter on the lower rainfall areas of the slopes and plains.

MISCELLANEOUS.—Further sections of the report deal with poultry diseases, the operation of the Swine Abortion Act and inspection of dairy herds. The numbers of stock in the state as at March 31st, 1933, are given as:– horses, 528,943; cattle, 3,141,174; sheep, 53,698,000 and pigs, 388,273.

GLENFIELD RESEARCH STATION.—The research activities of the station are reviewed. The principal investigations were those on tuberculosis and sterility of dairy cattle, and malnutrition and worm infestation of sheep. It was shown that, in the treatment of liver fluke infestation, repeated drenching with 2 c.c. of carbon tetrachloride had no ill effects when repeated at fortnightly intervals over an extended period. The occurrence of acute paratyphoid infection in pigs was demonstrated. Work was continued on infectious avian catarrh in poultry, while the year's experience confirmed the value of the fowl pox vaccine.

During the year two important investigations into contagious abortion and the effect of nutritional factors in parasitic gastro-enteritis were carried out under subsidy from the Australian Dairy Cattle Disease Research Association, and the Pastures Protection Board, respectively. The subsidy provided by the McGarvie Smith Institute had also been expended on the investigation of parasitic problems of sheep, particular attention being devoted to the influence of wool character on the incidence of fly strike.—I. CLUNIES ROSS.

NIGERIA. (1936). **Annual Report on the Veterinary Department 1935.** [HENDERSON, W. W.] pp. 25. 3 tables. Kaduna: Govt. Printer. [fcp] [2s. 6d.]

The main work of the department continued to be the anti-rinderpest operations. 371,254 cattle received serum-virus treatment, 181,810 were given vaccine, and 7,914 received serum only. Animals were immunized as follows mainly in conjunction with the anti-rinderpest organization :– 502,963 cattle with blackleg vaccine; 94,386 with cont. bov. pl.-pneumonia vaccine; 14,601 with anthrax vaccine and 108 cows with *Brucella abortus* vaccine. Over 15,000 animals were treated for trypanosomiasis. 48 cases of tuberculosis were diagnosed in abattoir carcasses. F. and M. disease occurred in a mild form only, and haemorrhagic septicaemia caused a few deaths.

Rinderpest occurred only in small localized outbreaks, except in the outlying Adamawa and Bornu provinces. Spleen vaccine was used during the year on the trade slaughter cattle, en route for markets, and also on herds permanently resident near the international border, where climatic conditions, bad grazing, bad water supply, and other disease had greatly increased mortality with the sero-virus method of immunization.

Only small sporadic outbreaks of blackleg, cont. bov. pl.-pneumonia and streptothricosis were reported.

No tick-borne disease is mentioned as having been a cause of death, except in the course of rinderpest immunization.

The diseases of sheep and goats mentioned are cont. pl.-pneumonia and demodectic mange of goats. Liver fluke infestation of goats and sheep occurred in the Bornu province.

The diseases of horses mentioned are epizootic lymphangitis and trypanosomiasis.

Rabies was the most important disease in dogs. 1,410 doses of an antirabic vaccine issued by the department's laboratory were used.

Routine treatment for helminth infestation of calves on the stock farms has been found beneficial. Owing to the difficulty of obtaining rinderpest-susceptible animals, it was necessary to decentralize the production of anti-rinderpest vaccine and, in consequence, this is now produced to a greater extent under the supervision of veterinary officers in the provinces.

A serum and vaccine laboratory has been constructed at Kano and is being completely equipped by the Kano Native Administration. Although it was not completed by the end of the year, 28,000 doses of anti-rinderpest serum and 22,000 doses of vaccine had been produced.

A school at Kano which gives elementary training to native assistants has held two sessions of six months each. It is hoped later to obtain better-educated candidates, with a view to establishing a three years' course for African Veterinary Assistants.

Measures for the prevention of cruelty to animals have been more vigorously extended by the introduction of a European type of horse bit and the abolition of the use of the cruel native-made horse bits. Other means have also been introduced for the relief of suffering among pack animals. The various free veterinary clinics, particularly those at Zaria, Katsina, Kano and Sokoto, have been able to do a great deal for these native-owned animals.

Details are given of the work carried out at the headquarters laboratory, which consists almost exclusively of the production of anti-rinderpest serum and the vaccines for issue to veterinary officers.

The biological products issued were :– 191,400 litres of anti-rinderpest serum, 26,028 litres of rinderpest spleen vaccine, 3,151 litres of blackleg formolized

culture vaccine, 908 litres of cont. bov. pl.-pneumonia culture vaccine and 17,760 doses of anthrax vaccine, in addition to smaller quantities of other vaccines.
—J. A. G.

GOLD COAST COLONY. (1936). **Report on the Department of Animal Health for the Year 1935-36.** [STEWART, J. L.] pp. 30. 1 table, 1 appendix. Accra: Govt. Printer. [fcp] [2s.]

The European staff has been increased to permit of the re-opening of the coastal section. This will lead to the development of a very backward area, which is, however, close to the big meat markets.

FIELD VETERINARY WORK.—In spite of the fact that all the cattle of the country over two years old have been immunized against rinderpest, there were numerous small outbreaks among young non-immunized cattle after weaning, resulting in the loss of some 500 head. This is a remarkable example of the susceptibility of the West African shorthorn to rinderpest, as these susceptible cattle amount to only about 10 per cent. of the cattle. It has been found necessary to abandon the Tamale susceptible reserve which, though surrounded by a zone of immunized cattle 100 miles deep, has twice been infected by rinderpest during the year from trade cattle smuggled in; considerable losses occurred and the cattle of the reserve are being permanently immunized. The usual immunization of young cattle at the various district immunization camps was carried out, 30,000 cattle being dealt with. The unhumped cattle of the Gold Coast are much more susceptible to rinderpest than are the zebu.

Cont. bov. pl.-pneumonia was again prominent, as it has been since the suppression of epizootics of rinderpest. Five outbreaks were reported, 400 animals being slaughtered. Vaccination on a large scale has been successful and, in future, pl.-pneumonia vaccination will be given simultaneously with anti-rinderpest immunization at the camps.

African horse-sickness was recorded definitely for the first time in this country at Accra, on the coast.

A serious rabies outbreak, affecting both men and dogs, gave considerable trouble, but co-operative measures with the Health Department have been effective and, though the outbreak is not yet over, cases are now very infrequent.

VETERINARY LABORATORY.—The new vaccine against cont. bov. pl.-pneumonia has given splendid results. The vaccine can be used with safety after the 30th generation and is inoculated behind the shoulder. A satisfactory immunity is established within a few weeks. The practical application is in the treatment of herds round the infected area, but it is unwise to treat herds that are already infected, as then the natives give the vaccine credit for any deaths which may occur among cattle in the incubative stage. "Novarsenobillon" was found effective as a curative agent.

The large aggressive anti-tsetse eradication programme has been virtually completed at Pong-Tamale and has cleared the whole area successfully. Considerable information appears about the botany of the typical tsetse river of the West African savanna. Research has shown that flies of the *Glossina palpalis* group, particularly *G. tachinoides*, have a longer range of flight than had been thought and also sally forth into the open in search of food more readily than had been imagined. These points are of value in appraising the value of defensive clearings, which are of little use except at the height of the dry season.

The clearing research at Pong-Tamale has been applied to other tsetse areas in the Northern Territories particularly at Yendi, where an aggressive clearing scheme has caused fly to disappear from the large town of Yendi and its environs, previously moderately infested.

ANIMAL HUSBANDRY.—Difficulty has been experienced in maintaining the standard of quality of the cattle of the country owing to the owners selling their bulls over two or three years old and leaving none but young immature animals, many of them scrubs. The extension of Native Administration farms, formed to produce communal bulls, and the prohibition or limitation of sale and slaughter of immature males, will solve this problem; these measures are being actively carried on. The unhumped West African shorthorn is inclined to be too small and light as a slaughter bullock and improvement schemes are devoted to the increase of weight and quality. The N'Dama, an almost pure representative of the Hamitic Longhorn, the White Fulani, a zebu with much Hamitic Longhorn, and the Sudanese, a zebu with considerable brachycerous blood, are the types which are found most suitable for cattle improvement. The N'Dama in particular improves the local animal in size and quality and also in resistance to trypanosomiasis.

Large White Yorkshire pigs are used successfully to grade the local animal, and Rhode Island Red and Leghorn poultry are in great demand. The Native Administration farms have increased and have developed considerably during the year.

I. BEATH, O. A. (1935). [**Report of the**] **Chemistry Department** [**for 1934-1935**].—*45th Rep. Wyo. agric. Exp. Sta. 1934-1935.* pp. 15-18.

II. LEE, A. M. (1935). **U.S.A.** [**Report of the**] **Veterinary Department** [**for 1934-1935**].—*Ibid.* pp. 22-23.

I. It has been discovered that certain plants, notably woody aster, *Oonopsis* and some vetches can convert or concentrate selenium in soil and thereby make it available for absorption by other plants, which cannot absorb it directly. Livestock do not feed voluntarily on these converter plants.

It is stated that Se poisoning produces two chronic forms of disease, namely, blind staggers (characterized by anorexia and blindness), and alkali disease, in the advanced stage of which the hooves and hair are shed.

II. Work was started on the production of a *Fusiformis necrophorus* vaccine against calf diphtheria.

Research on stiff lambs has been published elsewhere [*V. B.* **5.** 646 and 742].

Roup was successfully transmitted to healthy fowls by the nasal installation of nasal exudate. It was also observed that a flock of fowls, if well housed, had a strong natural resistance to roup.—J. E.

NORTHERN RHODESIA: (1936). **Veterinary Department. Annual Report for the Year 1935.** [MORRIS, J. P. A.] pp. 35. 15 tables, 1 appendix. Lusaka: Govt. Printer. [fcp] [2s. 6d.]

The name of the department was changed to its new form (above) in 1935, but the staff remained virtually the same as before. The headquarters is located at the Central Research Station, Mazabuka. The director recommends an increase in native veterinary staff, as this has proved very valuable in the past.

ANIMAL DISEASES.—A classified list of indigenous livestock diseases in Northern Rhodesia and adjoining territory is given, and there are short notes on some of them. Anthrax caused many deaths in the Barotse province, but as the department's resources in this area have first to be directed against cont. bov. pl.-pneumonia, anthrax could not be given great attention as regards large-scale control.

Contagious abortion is enzootic and sometimes flares up locally: it does not cause serious loss. Tuberculosis is occasionally seen at meat inspection. Bronchopneumonia causes losses in sheep, particularly at the time of dipping, which

evidently has a contributory effect. " The organism associated with the disease is identical to that isolated from similar cases in the British Isles, Iceland, the United States of America and the Union of South Africa."

Piroplasmosis and anaplasmosis cause some loss ; " acaprin " gives the best results in treatment.

The tsetse fly situation was investigated in the Abercorn district by Mr SWYNNERTON of the Tsetse Research Department, Tanganyika, and control measures are being put into operation. Trypanosomiasis is sometimes spread by biting flies other than tsetse. The feeding of the cattle, affected with trypanosomiasis, with hay, ensilage and bone meal during dry periods is recommended. Clinical cases are treated with potassium antimony tartrate in preference to " naganol " and " antimosan ", purely on the score of expense. *T. vivax* and *T. congolense* are the common trypanosomes in cattle in Northern Rhodesia.

The cont. bov. pl.-pneumonia problem of the Barotse province remained the same as in previous years, but a start to use vaccination as part of an eradication plan is recorded. No fresh case of F. and M. disease occurred during 1935, but an outbreak beginning in the Abercorn district in 1934 was eradicated by March, 1935.

Thirty-six outbreaks of rabies were reported : the control plan submitted in 1934 was not put into operation owing to lack of funds.—J. E.

NORTHERN RHODESIA. (1936). **Report of the Central Research Station, Mazabuka, for 1935.** [LE ROUX, P. L.]—*Rep. Dep. Anim. Hlth N. Rhod. 1935.* pp. 29-35.

The report is largely concerned with observations on F. and M. disease, which appeared near Mazabuka in November, 1934. All the cattle in the vicinity were artificially infected in order to produce general immunity within a short time. During vaccination it was noticed that the virus increased quickly in potency when passed rapidly among the cattle by tongue inoculation, the interval of vesicle formation being reduced from 24 to 12 hours. When, however, in such passages, virus was collected from foot vesicles, an attenuation of potency was observed, the interval for tongue vesicle formation increasing to 30 hours at the fifth passage. Such virus was adopted for routine use ; it conferred a strong immunity without causing severe reactions.

Twenty sheep reacted mildly (small tongue vesicles only) when inoculated in the tongue. Virus was also passed through g. pigs.

A few tests of the persistence of virus on grass, wood and cloth, in the carcass of an infected " animal ", on the feet, and in the mouth of natural cases, were carried out. Virus was no longer present on grass, wood or cloth after six days, in the carcass of an animal killed on the 12th day after infection, or on the skin or hair of the legs of natural cases, eight days after rupture of foot vesicles. Virus was still present in the mouth five days after the rupture of vesicles. Pure lymph virus, diluted 1 : 500 in a glycerin-saline preservative, remained viable for six weeks if kept in the shade wrapped in a damp cloth. In a refrigerator (4°C.) it kept for two months.

Sweating sickness in calves was quickly cured by the injection (intraven.) of 10 c.c. of a 25% solution of formalin.—J. E.

CZECHOSLOVAKIA. (1936). VI. Konferenz für präventive Medizin in Johannisbad, 31. Janner bis 3. Februar 1936. [**Sixth Conference for Preventive Medicine, Johannisbad, Czechoslovakia, Jan.-Feb., 1936. – Report of Veterinary Section**].—*Prag. tierärztl. Arch.* **16.** 129-136.

PFAFF and MARTIN discussed the role of the veterinarian in public health work. JANEČEK, BÄUML and ČERNOVSKY spoke on diseases transmissible from animals to man, NÄDVORNÍK, BÁUML and PÍŠA on food inspection, KADENSKY on milk hygiene and CHLADEK on bacterial warfare. The details of titles will be found in *Index Veterinarius*.—J. E.

BOOK REVIEWS.

MAREK, J. (1937). Lehrbuch der klinischen Diagnostik der inneren Krankheiten der Haustiere. **[The Clinical Diagnosis of Internal Diseases of Domestic Animals]**. pp. xii + 596. Numerous figs., figs. on plates, and graphs. 1 table. Jena: Gustav Fischer. [8vo] [RM.27.50].

During the 15 years which have elapsed since the appearance of the second edition, much new knowledge on clinical diagnosis has been acquired, so that the book has required extensive revision. The author has taken the opportunity to reduce the size of the book by some 250 pages, making a selection of the methods to be dealt with. The illustrations have also been revised and many new ones added.

The title " clinical diagnosis " is used in the widest sense and includes laboratory methods, such as the various types of microscopy, urine and blood analysis, faecal examination and the like. The book thus links up general practice and the laboratory, and is of great importance to workers in both fields, including the veterinary parasitologist and those engaged on poultry and fur animal work.

This mine of information is strongly recommended and welcomed.—J. E.

DROANDI, I. (1936). Il cammello. **[The Camel]**. pp. viii+856. 188 figs., 11 tables. [Numerous refs.] Florence: Istituto Agricolo Coloniale Italiano. [8vo] [L. 50].

This exhaustive work is the product of ten years' study by the author and deals with camels – their natural history, anatomy, physiology, general management as riding and baggage animals, and diseases.

The single-humped Arabian camel (*Camelus dromedarius*) of Africa is chiefly considered, but considerable information is also given on the two-humped Bactrian camel of Asia (*C. bactrianus*) and on both types as indigenous to Syria and Arabia, the Bactrian alone being found in central Asia.

The anatomical section is concise but informative, being well illustrated by photographs and line drawings; numerous tables showing standard lengths and sizes of the organs of different breeds are given.

The chapter on physiology is limited to special physiology, such as is peculiar to camels as compared with other domestic animals, and is largely confined to sexual matters and dietetics.

The distribution and breeds of camels in the world are discussed and in this connexion it seems that the author's estimate of 1,600,000 camels in Africa is a gross underestimate, as the estimated number of camels in British Somaliland alone in 1935 was 1,500,000. Camels have been introduced into Western Australia, Mexico, South Africa, Spain and Italy and the author considers that they would do well on the Brazilian plateau and Texas (Arabian), the Rocky Mountains and Argentine (Bactrian).

The section on camel diseases covers nearly 200 pages and appears to be fairly comprehensive, particularly with regard to the well-known parasitic and infectious diseases.

The book is a most valuable newcomer and should be much in demand among veterinary and agricultural workers in charge of camels. It has, however, a very flimsy binding and paper cover.—J. E.

BREDERECK, H. (1936). Vitamine und Hormone und ihre technische Darstellung. **[Vitamins and Hormones].** pp. xi + 101. 3 tables. [Numerous refs.] Leipzig: S. Hirzel. [8vo] [RM.6].

This book gives a general account of the chemical composition and function of the various vitamins and hormones; a second part, in which the preparation and synthesis of these substances will be dealt with exclusively, is in course of preparation and the two will together form a section of a larger book on modern chemical technique which is shortly to be published.

The author describes seven main vitamins and subdivides vitamin B into seven fractions. Of these, B_1, B_2 and B_4 are the most important and their identity can be accepted, but at present there is hardly sufficient evidence to show whether the other fractions are in fact separate substances. The identity of vitamin E also remains obscure and the effect of its absence from a diet has only been satisfactorily shown in rats. Experiments with this vitamin are difficult and take a long time, since clear-cut results cannot be obtained until the second generation of the experimental animals has been raised.

The hormones are also considered individually and here again their chemistry is dealt with in some detail. Their close chemical relationship is clearly shown and it is concluded that in the body they must all be built up from cholesterol.

Whilst this book will be of particular interest to chemists, the account given of the action, occurrence and recognition of the various vitamins and hormones is sufficient to render it of great value to physiologists and practitioners.—J. A. N.

MILLER, W. C. [Courtauld Prof. of Animal Husbandry, Royal Veterinary College, London], & ROBERTSON, E. D. S. [Lecturer on Animal Management, Royal (Dick) Veterinary College; Lecturer on Veterinary Hygiene, Edinburgh and East of Scotland College of Agriculture]. (1937). **Practical Animal Husbandry.** pp. xi + 432. 148 text figs., 32 figs. on 18 plates, 15 tables, 4 appendixes. [Numerous refs.] Edinburgh and London: Oliver & Boyd. [2nd Edit.] [4to] [15s.]

Whilst retaining its original form this edition has been revised to bring various sections up to date. The chapters on cattle and pig management now include sections on the Milk Marketing Board and the Pig Marketing Board, and there are new chapters on fur-animal breeding and legislation relating to livestock.

The book ought to be of great value in the veterinary and farming world and be popular as, or more popular than, the first edition which appeared in 1933. —J. E.